THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL 1867.

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TO READERS AND CORRESPONDENTS.

In addition to the communications already acknowledged, and which have not yet been published, we have received papers from Drs. J. H. Brinton, J. C. Nott, E. Holden, T. Parvin, J. Green, W. S. W. Ruschenberger, S. Hubbard, J. G. Harvey, J. H. Shaffner, W. W. Lambuth, D. N. Rankin, S. G. Weller, S. J. Weldon, J. K. France, W. F. Atlee, Clarkson Freeman, John Parsons, T. H. Buckler, Carl Both, R. A. Kinloch, and M. Kempf, all of which shall receive a respectful consideration when articles are selected for the July number.

All articles intended for the *Original Department* of this Journal must be communicated to it exclusively.

Contributors who design to favour us with original articles for the July No. should forward them before the 1st of May.

Compensation is allowed for original articles, and reviews, *except* when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors *if the request for them be made when the communication is sent.* The extensive circulation of this Journal renders extra copies of comparatively little value to authors who only desire their observations made known to their professional brethren.

The following works have been received:—

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Volume the 49th. London: Longmans, Green, & Co., 1866.

Transactions of the Obstetrical Society of London. Vol. VIII. for the year 1866, with a List of Officers, Fellows, etc. London: Longmans, Green & Co., 1867.

Catalogue and Report of Obstetrical and other Instruments exhibited at the conversazione of the Obstetrical Society of London, held by permission, at the Royal College of Physicians, March 28, 1866, with numerous illustrations. London: 1867.

St. George's Hospital Reports. Edited by John W. Ogle, M. D., F. R. C. P., and Timothy Holmes, F. R. C. S. Vol. 1, 1866. London: John Churchill & Sons.

The Indigestions or Diseases of the Digestive Organs functionally treated. By Thomas King Chambers, Honorary Physician to H. R. H., the Prince of Wales, consulting Physician and Lecturer on the Practice of Medicine at St. Mary's Hospital, etc. London: John Churchill & Sons, 1867. (From the Author.)

On Malformations of the Human Heart, etc., with original cases and illustrations. By Thomas B. Peacock, M. D., F. R. C. P., Physician to St. Thomas's Hospital, etc. London: John Churchill & Sons, 1866.

On Ovariotomy (Clinical Surgery, Part VII.). By Thomas Bryant, F. R. C. S., Assistant Surgeon to Guy's Hospital. London: John Churchill & Sons, 1867.

Change of Air considered with regard to Atmospheric pressure, and its electric and magnetic concomitants, in the treatment of Consumption and Chronic Disease, with a general commentary on the most eligible localities for invalids. By J. C. Atkinson, M. D. London: Trübner & Co., 1867.

Atlas of Surgical and Topographical Anatomy. By B. J. Béraud, Surgeon and Professor to the Maternity Hospital of Paris, etc. etc. etc. Illustrated by One Hundred Plates, drawn from Nature. By M. Bion. Translated by Robert Thomas Hulme, M. R. C. S., Eng. Parts, 4, 5, 6, 7. London: H. Baillière, 1866.

Remarks on Chronic Albuminuria, originating during the convalescence from Scarlet Fever and other eruptive diseases. By Hermann Weber, M. D., F. R. C. P., Physician to the German Hospital. London, 1866.

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A Modification of the Operation for Strabismus. By Richard Liebreich, M. D., Professor of Ophthalmology, Paris. (From the Author.)

Erkennung und Behandlung der Prostata-Krankheiten. Von Henry Thompson, Arzt am Londoner Universitäts-Hospitale, etc. Autorisirte deutsche Ausgabe, mit 25 in den Text gedruckten Holzschnitten und 2 Farbendrucktafeln. Erlangen: Verlag von Ferdinand Enke, 1867.

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The Renewal of Life. Lectures, chiefly Clinical. By THOMAS KING CHAMBERS, M. D., Honorary Physician to H. R. H. the Prince of Wales. Second American, from the 4th London Edition. Philadelphia: Lindsay & Blakiston, 1866.

The Functions and Disorders of the Reproductive Organs in Childhood, Youth, Adult Age, and Advanced Life, considered in their Physiological, Social, and Moral Relations. By WILLIAM ACTON, M. R. C. S., etc. etc. Second American from the 4th London Edition. Philadelphia: Lindsay & Blakiston, 1867.

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The Science and Practice of Medicine. By WILLIAM AITKEN, M. D., Edin., Prof. Pathology in Army Medical School, etc. In two volumes. Vol. II., from the 4th London Edition, with additions. By MEREDITH CLYMER, M. D., late Prof. of the Inst. and Pract. Med. in Univ. New York, etc. Philadelphia: Lindsay & Blakiston, 1866.

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Two Cases of Œsophagotomy for the removal of Foreign Bodies; with a history of the Operation. By DAVID W. CHEEVER, M. D., Asst. Prof. of Anatomy in Harvard University, etc. Boston: David Clapp & Son, 1867.

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Report of the Committee on "Spotted Fever, so-called." By JAMES J. LEVICK, M. D., One of the Physicians of Pennsylvania Hospital, etc. (From the Author.)

On the Relations which Electricity sustains to the Causes of Disease. By S. LITTELL, M. D., Emeritus Surgeon of Wills' Hospital, Philadelphia. (From the Author.)

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Proceedings of the Pathological Society of Phila. Vol. II. Philadelphia, 1867.

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Minutes of the Proceedings of the 13th Annual Meeting of the Medical Society of the State of North Carolina, held at Raleigh, Jan. 5th, 1866. Wilmington, 1867.

Proceedings of the Academy of Natural Sciences of Philadelphia—No. 4. Sept., Oct., and Nov., 1866. Philadelphia, 1866.

Twelfth Annual Report of the Board of Trustees and Officers of the Southern Ohio Lunatic Asylum, for the year 1866. Columbus, 1867.

Report of Warden of Jail in District of Columbia. (From Dr. Duhamel.)

Annual Report of the Trustees and Superintendent of the Wisconsin State Hospital for the Insane, for the year ending September 30, 1866.

Eighteenth Annual Report of the Commissioners, Superintendent, and Steward of the Indiana Hospital for the Insane, for the year ending October 31, 1866.

An Address, delivered before the Norfolk District Medical Society, at the Annual Meeting, May 8, 1866. By STEPHEN SALISBURY, M. D. Boston, 1866.

Advice to Students—An Address. By Prof. C. E. BROWN SÉQUARD, M. D. Cambridge, 1867. (From the Author.)

Remarks on Classical and Utilitarian Studies. By JACOB BIGELOW, M. D., late President of the Academy. Boston, 1867. (From the Author.)

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Fourteenth Annual Report of the Pennsylvania Training School for Feeble-Minded Children. Philadelphia: 1867.

Third Annual Report of Board of State Charities of Massachusetts. Boston, 1867.

Medical Register of the District of Columbia, 1867. Embracing notices of the Medical, Benevolent, and Public Institutions of Washington. By J. M. TONER, M. D. Washington, D. C., 1867. (From the Author.)

The following Journals have been received in exchange:

Revue de Thérapeutique Médico-Chirurgicale. Par A. MARTIN-LAUZER, M. D. Nos. 18, 19, 20, 21, 22, 23, 24, 1866. Nos. 1, 2, 1867.

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Gazette Médicale de Paris. Nos. 29, 30, 31, 44, 45, 1866.

The Half-Yearly Abstract of the Medical Sciences. Vol. XLIV. July—December, 1866. London: John Churchill & Sons, 1867.

The Retrospect of Medicine. Edited by W. BRAITHWAITE, M. D., and JAMES BRAITHWAITE, M. D. Vol. LIV. July—December, 1866. London, 1867.

The British and Foreign Medico-Chirurgical Review. Oct., 1866, January, 1867.

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Edinburgh Medical Journal. September, 1866, to February, 1867.

The Glassgow Medical Journal. September, 1863, to February, 1867.

The Medical Mirror. September, 1866, to February, 1867.

The Ophthalmic Review. Edited by J. Zachariah Laurence and Thomas Windsor. October, 1866.

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The Dublin Quarterly Journal of Medical Science. Nov., 1866, February, 1867.

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Canada Medical Journal. Edited by G. E. Fenwick, M. D., and F. W. Campbell, M. D., L. R. C. P. L. August, November, December, 1866, January, 1867.

The Boston Medical and Surgical Journal. Edited by Samuel Abbot, M. D., and Jas. C. White, M. D. October, 1866, to March, 1867.

The American Journal of Insanity. Edited by the Medical Officers of the New York State Lunatic Asylum. October, 1866, January, 1867.

The Cincinnati Lancet and Observer. Edited by Edward B. Stevens, M. D., and John A. Murphy, M. D. October, 1866, to February, 1867.

The St. Louis Medical and Surgical Journal. Edited by M. L. Linton, M. D., and Frank W. White, M. D. September, October, November, December, 1866.

The New York Medical Journal. October, 1866, to March 1867.

The Medical Record. October, 1866, to March, 1867.

The Buffalo Medical and Surgical Journal. Edited by Julius F. Miner, M. D. September, 1866, to February, 1867.

The Chicago Medical Examiner. Edited by N. S. Davis, M. D. October, 1866, to March, 1867.

The Chicago Medical Journal. October, 1866, to February, 1867.

The Medical and Surgical Reporter. Edited by S. W. Butler, M. D. October, 1866, to March, 1867.

The Cincinnati Journal of Medicine. Edited by Geo. C. Blackman, M. D., and Theophilus Parvin, M. D. October, 1866, to February, 1867.

The Richmond Medical Journal. Edited by E. S. Gaillard, M. D., and W. S. McChesney, M. D. October, 1866, to February, 1867.

The Savannah Journal of Medicine. Edited by Jubiah Harris, M. D., J. B. Read, M. D., and J. G. Thomas, M. D. September, November, 1866.

Atlanta Medical and Surgical Journal. Edited by J. G. Westmoreland, M. D., and W. F. Westmoreland, M. D. November, 1866, to February, 1867.

Southern Journal of Medical Sciences. Edited by D. Warren Brickell, M. D., C. Beard, M. D., and W. S. Mitchell, M. D. November, 1866, February, 1867.

The Pacific Medical and Surgical Journal and Press. Edited by Henry Gibbons, M. D. October, December, 1866, February, 1867.

The St. Louis Medical Reporter. Edited by J. S. B. Alleyne, M. D., and O. F. Potter, M. D. October, 1866, to February, 1867.

The Nashville Journal of Medicine and Surgery. Edited by Profs. W. K. Bowling, P. F. Eve, Jos. Jones, and G. S. Blackie, October, 1866, to February, 1867.

The Galveston Medical Journal. Edited by Greensville Dowell, M. D. May, June, September, October, November, December, 1866.

Southern Medical and Surgical Journal. Edited by Joseph Jones, M. D. October, 1866.

The New Orleans Medical and Surgical Journal. March, 1867.

The Detroit Review of Medicine and Pharmacy. Edited by Geo. P. Andrews, M. D., S. P. Duffield, Ph. D., and E. W. Jenks, M. D. October, 1866, to February, 1867.

The American Journal of Pharmacy. Published by Authority of the Philadelphia College of Pharmacy. Edited by Wm. Procter, Jr. November, 1866, to March, 1867.

The Druggists' Circular and Chemical Gazette. October, 1866, to March, 1867.

The Journal of Materia Medica. Conducted by Joseph Bates, M. D., and H. A. Tilden. October, 1866, to February, 1867.

The Dental Cosmos. Edited by J. H. McQuillen, D. D. S., and George J. Ziegler, M. D. October, 1866, to March, 1867.

The American Journal of Science and Arts. May, 1865, to January, 1867.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to Isaac Hays, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London*; or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

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1. Of the Maine Insane Hospital, for the fiscal year 1865–66.
2. Of the Vermont Asylum, for the fiscal year 1865–66.
3. Of the State Hospital at Taunton, Mass., for the fiscal year 1865–66.
4. Of the Pennsylvania State Hospital, for the year 1866.
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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL 1867.

ART. I.—*Observations on Wounds of the Internal Jugular Vein and their Treatment, with Special Reference to the Safety of the Ligature; embracing a Statistical Account of Eighty-Six Cases, with some Remarks upon the General Applicability of Ligation as a Venous Hemostatic Agent.* By S. W. GROSS, M. D., late Surgeon and Brevet Lt.-Col. U. S. V.

IN the January number of this Journal the consideration of wounds of the internal jugular vein was brought to a close by a brief examination of the cases of simultaneous injury of that vessel and the carotid artery, resulting in the formation of arterio-venous aneurism. There is, however, one example of aneurismal varix, which occurred in the practice of M. Joret, of Vannes, in 1835, which deserves special mention, as it presents the very interesting peculiarity of a pistol-ball becoming encysted in the vein.

A man, 35 years of age, was wounded in a duel on the 2d of May, 1835, the missile, a small pistol-ball, having traversed the right side of the face and entered the neck behind the left tonsil, where it could be readily detected, but resisted all efforts at extraction by the mouth. Four days subsequently the wound had suppurated, and the ball had disappeared. A pulsating tumour soon formed, but the characteristic vibratory thrill did not appear until October of the following year. During the same winter the patient presented symptoms of softening of the brain; he became idiotic and paralyzed; and from June, 1837, until the date of his death, he had several epileptic convulsions. An attack of acute bronchitis put an end to his sufferings on the 25th of October, 1837, nearly two years and a half having elapsed since the reception of the injury.

The *post-mortem* examination showed the brain to be extensively softened, with thrombi in each lateral sinus. The internal jugular vein was found to contain the somewhat flattened ball, just behind the angle of the jaw. It was adherent to the sides of the vessel, and was retained in its position by tissues of new formation. The coats of the vein below the ball were perfectly normal in size and structure. Above, or between the missile and the base of the skull, the vein had become so much thickened as to resemble an artery, and it here

communicated with the internal carotid artery, which was expanded into a sac as large as a pigeon's egg, extending from the point of communication with the vein to the carotid foramen. This pouch contained clots of old and new formation, and below it, the artery was of its natural shape and dimensions.[1]

TREATMENT OF WOUNDS OF THE INTERNAL JUGULAR VEIN.—The object of the treatment of wounds of the internal jugular vein being to restrain hemorrhage and to prevent the introduction of air, it will be found that the only measures upon which reliance can be placed are ligation and compression. *Deep inspirations*, as advised by Dupuytren as a means of arresting venous hemorrhage, are entirely out of the question, on account of the danger of air being at the same time drawn into the vessel; and even were this not the case, the measure is inapplicable, from the fact of operations being conducted under the influence of anæsthetic agents.

Styptics.—The ancients placed great reliance on incarnative or styptic remedies, combined with compression, and of these, twelve centuries ago, Paulus Ægineta writes:—

"The most excellent of all the incarnative medicines which we know, is that used with safety for hemorrhages from the meninges of the brain, and which may be used in wounds of the neck, even for those of the jugular veins, for it will restrain a bleeding from them without a ligature. It contains of the fattest frankincense, p. j; and of aloes, when applied to soft bodies, p. ss; but when too hard, an equal quantity, and instead of the frankincense manna is to be substituted. These are to be mixed with the white of an egg until they become of the consistence of honey, when it is to be applied upon the soft down of a hare to the vessel and the whole wound; and a bandage is to be put on externally, the first four or five turns of which we are to make upon the bleeding vessel, and from thence extend to the root of it."[2]

In the first half of the last century Wiseman and Turner saturated their compresses with a styptic composed of astringent powders rubbed up with the white of an egg and vinegar. Richter, towards the close of the last century, dispensed with styptics, and advised pressure for small wounds of the internal jugular. "This is accomplished by means of graduated compresses, underneath which a small piece of sponge is placed, retained by a roller. Should the latter prove troublesome, digital compression may be substituted, and be continued for one or two days."[3]

Styptics, in conjunction with compression, may not only be dispensed with, but their employment is useless. The solution of the sesquichloride of iron, which is most commonly employed, is to be scrupulously avoided, as it has an escharotic action on the coats of the vessel, and it is very liable to excite suppurative inflammation. It will moreover produce a very extensive coagulum, which may become disintegrated, and thus lead to purulent infection.

Acupressure is inapplicable.

[1] Encyclographie des Sciences Médicales, vol. ii., 4th ser., p. 578. 1840.

[2] The Seven Books of Paulus Ægineta, translated by Francis Adams, vol. ii. p. 128. Sydenham Society. London, 1846.

[3] Anfangsgründe der Wundarzneykunst, vol. iv. p. 173. Göttingen, 1797.

I. COMPRESSION.—Direct compression is the means usually advised by surgical writers to arrest bleeding from this vein. Mr. Pirogoff states that it has succeeded with him in every case, the number of which he does not, however, record;[1] but its adoption does not appear to have been so general as that of the ligature. Direct compression may be made by the fingers, or by plugging, in both of which it is said to be immediate, or by compresses placed over the closed wound, when it is mediate. The latter plan is to be preferred, and will answer an excellent purpose for small wounds.

Digital compression is valuable as a temporary means, in the event of the vein being opened during the performance of an operation. The finger is at once to be applied to the bleeding orifice, and retained until some time after the completion of the operation, to favour the formation of a coagulum; should the vein be completely divided, both extremities will require pressure, the cardiac end first, to prevent the entrance of air, and then the distal end to stop bleeding. As a permanent measure, the finger has been successfully resorted to in two cases—IV. V. In the former forty-eight hours sufficed to complete the cure; in the latter, seventy-two hours, but on account of its great inconveniences, permanent digital compression is not to be recommended.

Plugging was adopted in six of the successful and in both of the fatal cases; in four cases sponge, and in four charpie and lint, were the materials employed. The objections to charpie are that after its meshes have become saturated with blood, some of that fluid will escape from the external wound; and that it is liable, by the movements of the neck, as in deglutition, to be rolled into a smooth mass or ball, and become detached from the bleeding point. Sponge will, therefore, prove the very best material for tamponing. A small piece is to be retained in contact with the orifice until it adheres, when the cavity is to be filled with the same material, the external wound is to be lightly approximated by adhesive strips, and over the whole a compress is to be applied. In general, however, the latter will not be required at all, as the first piece of sponge will adhere so closely that further pressure may be dispensed with. The sponge is to be removed at the expiration of sixty hours, or three days, as was done in the case of Professor Langenbeck, at which time we may expect the wound of the vein to have become closed, or blocked up by coagulum.

Mediate compression is the most unobjectionable of all the modes of compression. The edges of the external wound having been approximated by a few points of the interrupted suture, successive layers of old linen are to be piled upon it and retained by a roller, or, better still, by adhesive strips. If the opening in the vein be small and does not gap, a moderate degree of pressure only must be exercised, in order to afford a light support to the walls of the vessel, and avoid obliteration of its cavity.

[1] Grundzüge der Allgemeinen Kriegschirurgie, p 555. Leipzig, 1864.

The subjoined fourteen cases, all that I have been able to collect, are instances of cures by the three modes of compression :—

Ambrose Paré has narrated three cases of punctured wounds of the jugular vein, in which the lesion must have been small, as he distinctly states that large wounds are mortal from hemorrhage. He does not, however, mention which jugular was involved, except in the second case—"les rameaux de la veine et artere jugulaire"—which certainly points to the internal jugular, particularly as the recurrent laryngeal nerve was wounded. From the direction of the wounds in the first and third cases, the anterior or internal jugular was punctured, probably the latter, as the bleeding was very copious. The cases are somewhat abbreviated, but literally translated, and are well worth reproduction. To use Paré's own language, "Or en cest endroit je veux bien reciter ces trois histoires, à fin qu'elles servent d'instruction signalée pour le jeune Chirurgien, si telles playes luy tombent entre ses mains."

CASE I.—On the 1st of May, 1574, Francis Brege, a pastry-cook, was wounded in the throat by a sword, which cut a part of the tracheal artery, and one of the jugular veins, from which flowed a great quantity of blood and a whistling from the said tracheal artery. The wound was stitched, and astringent remedies applied, and shortly after the air which escaped from the wound intruded itself between the areolar tissue and muscular spaces, not only of the throat, but also of the whole body (like a sheep which has been inflated to skin it) preventing speech. The face was so swollen that there was no appearance of nose nor eyes. A consultation was held; M. Bugo thought the patient could not recover; but Master John, the younger, did not wish to leave him without doing something, and being a bold operator, made several deep incisions, by which the blood and air were evacuated. Finally the pastry-cook recovered his speech, and some time afterwards was completely cured by the grace of God. He is still living, and pursuing his occupation with the Duke of Guise.

CASE II.—A nobleman, twenty-five years of age, received a sword wound of the throat, near the tracheal artery, which cut the branches of the jugular vein and artery, followed by a very large flow of blood, which was stanched after great trouble. Moreover, one of the vocal nerves was cut: likewise the nerves which arise from the vertebræ of the neck and are distributed to the arm, on which account the arm was motionless and paralyzed. Moreover, speech was greatly impaired, and the neck became a little twisted, so that he could not turn it as formerly. He was taken to the house of Master Pierre Petotot, Master Barber-Surgeon, with whom I consulted. I greatly doubted his recovery, and for this reason I sent for MM. Cointeret and Pietre, men well versed in surgery, and we reported to the courts that the wound was mortal. I continued of the same opinion, and God cured him. The arm remained powerless and the speech impaired.

CASE III.—In the year 1550, a man was wounded by a sword thrust in the throat, which cut one of the jugular veins and the tracheal artery. There was a profuse loss of blood, and he could not articulate until the wound was stitched and dressed. On account of the very large amount of blood lost, my prognosis was early death. However, I can assure you that he escaped, a result which I believe is to be more attributed to the grace of God than to mortal means and medicines.[1]

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[1] Œuvres completes d'Ambrose Paré. Par J. F. Malgaigne, vol. ii. p. 91–93. Paris, 1840.

There can be no doubt that these cases come properly under the head of cures by compression, for Paré remarks: "Et si la playe est avec incision des veines jugulaires et arteres carotides, l'effusion de sang serra arrestée, comme nous avons descrit au chapitre du flux de sang." On referring to that chapter[1] it will be seen that Paré advises the application of styptics and compression, and if these fail, they are to be removed, and pressure with the finger on the orifice of the vessel is to be substituted until a clot has formed.

CASE IV.—"Compression indeed of itself, without any restringent at all, has stopped the most violent of these fluxes, at least for a time; a remarkable instance of which we have given us in the case of his excellency William Prince of Orange, who, in his hurt by the Spanish boy, as my Lord Bacon relates, where the internal jugular was opened, could find no way to stop the flow of blood, till the orifice of the wound was hard compressed by men's thumbs, succeeding, for their ease, one after the other, for the space of forty-eight hours, when it was hereby stanched; though Heurnius delivers the same (I suppose, bursting out again), to be suppressed, after all others tried unsuccessfully, by means of a tent armed with a digestive, and wrapt round in colcothar, or the powder of burnt vitriol."[2]

CASE V.—"Chalmetée reports a case in which the internal jugular vein had been wounded, and the person was cured in three days by digital compression."[3]

CASE VI.—Wiseman narrates the case of a gentleman who had the internal jugular pierced by a rapier. The wound was small, but it bled with a full stream. "A servant stopped it with his fingers, whilst I made dressings ready of our common astringent powders, with the white of an egg and a little acetum, spread upon a pledget of lint, and a composition of the same, with compress and such bandage as it would bear. The hemorrhage recurred several times, but the cure was complete on the twentieth day.[4]

CASE VII.—"Professor Hamilton, of Geneva College, New York, who was unfortunate enough to cut the internal jugular vein in an operation upon the neck, thrust a sponge into the wound, and allowed it to remain until suppuration removed it. The frightful hemorrhage was thus stayed, and the patient recovered."[5]

CASE VIII.—Professor Henry Miller met with a case of division of the internal jugular vein in an attempt at suicide. The loss of blood was most profuse, but as it had ceased from syncope, Dr. Rogers, who first saw the woman, merely stitched the wound of the neck, and applied compresses over the divided vessel. On the eleventh day secondary venous hemorrhage occurred with the estimated loss of one gallon of blood; and there was a considerable cavity over the vessels, filled with blood, partly fluid and partly coagulated. Compresses were again trusted to. On the sixteenth day there was an alarming repetition of the hemorrhage, but this time from the carotid artery, on which one ligature was applied below the ulcerated point of the vessel. The wound healed rapidly; there was no return of the bleeding, and the patient made a good recovery.[6]

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[1] Œuvres completes d'Ambrose Paré. Par J. F. Malgaigne, vol. i. p. 440.

[2] The Art of Surgery. By Daniel Turner, M. D. 6th ed., vol. i. p. 346. London, 1741.

[3] Enchiridion de Chirurgie, ch. 19; and Jobert, Traité de Chirurgie d'Armée, 1863, p. 428.

[4] Eight Chirurgical Treatises. 5th ed., vol. ii. p. 66. London, 1719.

[5] Cooper's Surg. Dict. Reese's Am. ed., Supplement, p. 166. New York, 1842.

[6] Western Med. and Phys. Journ., vol. i. p. 425, Nov. 1827.

CASE IX.—M. ROUX, in an operation upon the neck, opened the internal jugular. The wound was plugged and the patient recovered.[1]

CASE X.—Professor Langenbeck wounded the internal jugular in the removal of a cyst of the neck, to which the sheath of the vessels was intimately connected. The wound was filled with charpie, and its edges were drawn together by adhesive strips. A compress was placed upon the wound, and retained in position by a towel. On the third day the parts were dressed and the compress and charpie dispensed with: and on the thirteenth day the wound had cicatrized. A portion of the vein four lines long and two lines in breadth had been sliced away.[2]

CASE XI.—M. Bégin reports the removal of a cancerous tumour of the neck, during which the internal jugular vein was wounded and air was aspired. The orifice was immediately compressed by the finger and the operation finished. At its completion methodical compression, in the usual manner, was substituted, and the patient recovered without a bad symptom.[3]

CASE XII.—M. Velpeau reports a case similar to that of M. Bégin in which the hemorrhage was successfully repressed by compression deep in the wound. Air had gained admittance into the opened internal jugular.[4]

CASE XIII.—Mr. John Adams saw a servant girl, thirteen years of age, who had fallen through a skylight, June 9th, 1862. When brought to the hospital, she was exsanguine and almost pulseless, and presented a deep, irregular wound in the right submaxillary space, from which, however, there was no bleeding. On removing the clot, a gush of blood ensued. Mr. Adams at once introduced his finger, upon which Mr. Curling enlarged the wound by dividing the skin upwards and downwards, in order that the bleeding vessel might be secured. This could not be reached, and the cavity was plugged with pieces of sponge. The edges of the wound were brought together by adhesive strips, and a compress was retained by means of a roller. On the 30th the wound had nearly united, and there had been no intermediate hemorrhage.[5]

CASE XIV.—"In wounds of this vein—internal jugular—it might be possible even to save the patient by plugging and compression, as was the case with an ancestor of the distinguished Mirabeau."[6]

The following cases in which compression was employed were fatal, the first from secondary hemorrhage, the second from apoplexy:—

CASE I.—The late Mr. Gray has recorded the following facts: "A man was admitted into St. George's Hospital on July 14th, 1847, having cut his throat with a penknife, which was followed by profuse hemorrhage. On the left side of the neck, a little below the cricoid cartilage, was a wound about an inch and a half in length, extending transversely across the space between the sterno-mastoid and trachea, partially dividing the muscles in this situation, and passing for some distance under the skin towards the clavicle. Dark blood was still welling from the wound, which was plugged with sponges, and pressure with the fingers applied. At 1 P. M. the wound was dilated upwards and downwards, no bleeding vessel was discovered, and it was evident that the bleeding proceeded from the lower end of the wound. About half a pint of blood was lost before the sponges were reapplied. The wound gradually suppurated, and the last sponge had been removed when a deep granulating cavity was seen, with a slough

[1] Malgaigne's Traité d'Anat. Chir. et de Chir. Expérimentale, vol. i. p. 346. Paris, 1859.
[2] Archiv für Klin. Chir., vol. i. p. 25. Berlin, 1860.
[3] Presse Médicale, July 22d, 1837, p. 463.
[4] Mémoires de l'Académie Royale de Médecine, vol. xvi. p. 358. Paris, 1852.
[5] Medical Times and Gazette, Aug. 9th, 1862, p. 125.
[6] Professor Pancoast, A Treatise on Operative Surgery, p. 47. Phila., 1852.

in the direction of the sheath of the vessels. On July 22d, at 5 P. M., the hemorrhage suddenly recurred to an alarming extent, and the patient died in the evening. On inspection of the body, a slough, completely destroying the front wall of the internal jugular vein for three inches of its extent, was found. The sloughing extended from about an inch above the junction of the vein with the subclavian, upwards; the posterior half of the vessel alone remaining. The common carotid artery had also been wounded at its anterior part; the opening was small, and was blocked up by lymph and coagulum, which was intimately adherent to the edges of the wound."[1]

CASE II.—Dr. Heineken has recorded the following unique case: "A soldier in the artillery was stabbed between the condyle of the lower jaw and the mastoid process, just below the lobe of the ear on the left side. The knife with which the wound was inflicted was about two inches and a half in length, about an inch in breadth, with a slight curve at its point; and it had been plunged up to the handle. Profuse bleeding ensued, which one of his comrades stopped by pressing with his finger upon the wound, after a large quantity of blood had been lost; and he was removed to the Portuguese hospital. Upon examination the temporal artery was found to be wounded, and with considerable difficulty was secured by ligatures. Upon the removal of pressure the hemorrhage returned almost as violently as ever, and in a constant full stream of the size of a goose-quill. As the man was greatly exhausted by the large quantity of blood lost, the first object was to suppress the hemorrhage as speedily as possible; and with this intent the wound was filled with pieces of sponge, and compresses were applied over them. In two hours from the suppression of the hemorrhage he became comatose, with paralysis of the right arm and leg, and a full pulse. Twelve ounces of blood were taken from the arm, an active cathartic given, and in the evening, as the symptoms remained the same, other twelve ounces were abstracted. On the following day the same plan of treatment was persevered in, and about every eighth hour more or less blood was withdrawn, but without giving any decided relief. On the seventh day he expired apoplectic. Upon examination a wound more than half an inch in length was found in the internal jugular vein immediately below the base of the skull, and, with the exception of the temporal artery before mentioned, no other vessel, nerve, or part of consequence was injured. There was no opportunity of opening the skull."[2]

Objections to Compression.—The treatment of wounds of the internal jugular vein by compression is open to the same accidents as the application of the ligature, and is also attended with some inconveniences and positive drawbacks, which demand consideration.

First. Unless the wound be small, the amount of pressure brought to bear upon the bleeding orifice—the soft tissues of the neck intervening—will be so great as not only to be painful, but it will also interfere with deglutition, and more or less with respiration.

Secondly. When the compression is immediate, and made directly upon the opening, the pain inflicted will be the greater, and a suppurating cavity is produced, by which primary union of the soft parts is defeated. Moreover the sponge, charpie, or lint, will, if not removed before suppurative action is set up, confine the discharges, which will soon become offensive, and may give rise to diffused phlebitis.

Secondary hemorrhage has occurred in three instances. One of these—

[1] A System of Surgery, edited by T. Holmes, vol. ii. p. 276. London, 1861.

[2] Edinburgh Med. and Surg. Journ., vol. xxx. p. 103. 1828.

that of Mr. Gray—was fatal, the bleeding having recurred on the eighth day, from destruction of the anterior wall of the vessel to the extent of three inches. In this case, on enlarging the wound, no bleeding vessel was discovered; but it was evident that the blood proceeded from below, and the wound was plugged with sponges. In Case VI. of the cures by compression, bleeding recurred on several occasions; and in Case VIII., the amount of blood lost on the eleventh day was enormous.

In Case X., Table I.,[1] it is scarcely probable that Professor Langenbeck could have omitted compression; but in this, as well as in the other fatal cases, the plan of treatment is not recorded.

Apoplexy.—In one case—that of Dr. Heineken—apoplexy was the cause of death. The situation of the wounded vein was such as to preclude the possibility of applying a ligature, and the wound was plugged with pieces of sponge, over which compresses were applied. Although the man was greatly exhausted by the loss of blood, *he became comatose, with paralysis of the right arm and leg*, in two hours after the suppression of the hemorrhage from the *left* internal jugular. Repeated bleedings failed to give decided relief, and he expired apoplectic on the seventh day.

Although there was no post-mortem examination of the head in the above case, there is strong reason to believe that the cerebral disturbance was due to the means employed to arrest the hemorrhage. That the sudden cutting off of the return of one-half of the venous blood from the brain and its membranes can be followed by such an event, admits of no discussion, more especially if there be also an impediment to the venous circulation of the opposite side. When the internal jugular is fully compressed, more blood enters the cranium by the arteries than can be returned by the veins. The result of this is that the brain will suffer from engorgement of the venous system, and the effects of this congestion show themselves in one or more of the varied symptoms of an apoplectic tendency, as loss of consciousness, disordered vision, ringing of the ears, giddiness, and drowsiness. These signs are usually evanescent, disappearing as soon as the blood has found new channels of return. The free collateral circulation, of which more will be said under the head of ligation of the vein, and the presence of the cephalo-spinal fluid have, in the great majority of instances, prevented even these symptoms.

The fear of producing apoplexy, by totally occluding the vessel, prevented Professor Wattman, of Vienna, from throwing a ligature around the whole circumference of the vein, and the lateral ligature, which he practised in its stead, was followed by paralysis and loss of sensation in the upper and lower extremities of the opposite side, for several days. In his case of cure of wound of the internal jugular by compression, Professor Miller, of Louisville, referring to the hemorrhage, remarks: "It occurred

[1] See January number of this Journal, p. 44.

to us that suppression might be effected, and the patient secured against all possibility of its return, by a ligature of the jugular vein. Our recollection, however, not furnishing any precedent for such an operation, and an apprehension that the brain might suffer fatal compression from the sudden interception of so considerable a stream of refluent blood, deterred us from adopting that expedient."

Dr. Gurlt narrates a case of compression of one jugular vein by a tumour, attended with symptoms of congestion, as headache, dimness of vision, flashes of light, and enlargement of the subcutaneous veins.[1] As a rule, however, signs of cerebral disturbance are to be looked for in those cases only in which the obstruction to the return of blood is sudden. In the instances of Haller, Lardner, Hodgson, Warren, Smith, Horner, McClellan, Langenbeck, Simson, Ulrich, and other writers, the vein was obliterated by morbid growths, and in none of these were symptoms of cerebral congestion present.

In connection with these cases it is interesting to note that apoplexy has also resulted from the interrupted circulation of both jugulars. Sir Astley Cooper performed some experiments upon rabbits by tying both jugulars. On the seventh day one rabbit was convulsed and frequently rolled over. The voluntary powers were lost, as well as sensation to a great degree, and death took place. A clot of blood was found in the left ventricle. "Hence it follows that apoplexy will follow occasionally an obstruction to the return of blood, and this I have known to happen from enlargement of the glands of the neck of a boy."[2] Mr. John Bell also relates an example of a tumour of the neck producing a similar result.[3] Dr. Abercrombie narrates the following instances of apoplexy referable to interrupted circulation :—

"A boy mentioned by Zitzilius had drawn his neckcloth remarkably tight, and was whipping his top, stooping and rising alternately, when, after a short time, he fell down apoplectic. The neckcloth being unloosened, and blood being drawn from the jugular vein, he speedily recovered. Kortum mentions a Swedish officer, who, to make his men look well in the face, obliged them to wear their collars very tight; the consequence was, that, in a few years, half the regiment died of apoplexy. Strangulation, when the neck is not dislocated, seems to be simply apoplexy. A man, brought after execution to Sauvages, was recovered by three bleedings, sat up and talked, his breathing and deglutition being natural. After a short time, the part of his neck where the cord had been applied began to swell, so as evidently to impede the circulation in the veins of the neck; he became drowsy, his pulse and respiration slow, without dyspnœa, and in a few hours he died apoplectic. A woman, mentioned by Wepfer, recovered after execution under the same treatment. After her recovery, she was for some time affected with vertigo, which subsided gradually."[4]

Instrumental compression, I may suggest, may be substituted for plug-

[1] Archiv für Klin. Chirur., vol. i. p. 59.
[2] Guy's Hospital Reports, vol. i. p. 471, 1836.
[3] Principles of Surgery, vol. ii. p. 556.
[4] Edinburgh Med. and Surg. Journal, Nov. 1818, p. 572.

ging and external compresses when the vessel is visible. For this purpose small spring forceps may be used to which a string is attached to facilitate its removal. In this way Mr. Porter controlled bleeding from the femoral vein in a thigh amputation, the small artery forceps of Dieffenbach having been pulled away in forty-eight hours.[1] By the use of such a contrivance for a wounded internal jugular vein, the pain will be less than after filling the wound with charpie or sponge, and the amount of suppuration will be much diminished.

It is to be remembered that an incomplete wound, unless very small, will furnish more blood than a wound entirely dividing the coats of the vessel, as the contraction of the fibrous elements of the vein causes the orifice to gap and assume a somewhat oval shape. The rule of practice should, therefore, always consist in following the example of the ancients, namely, complete division of the vessel so as to permit each end to retract within its sheath. By such a procedure the bleeding will be much diminished, and, in conjunction with any of the modes of compression, will favour the chances of a successful issue.

II. LIGATION.—The obliteration of the cavity of so large a vein as the internal jugular would at first sight appear to be a formidable operation, not only on account of the supposed dangers of phlebitis, but also from the effects of impairment of the cerebral circulation. The only attempts to collect these cases have been made by Professor Gibson, of this city, who narrates six examples, including his own;[2] and by the late Professor Malgaigne, who has reported sixteen cases, embracing those of Dr. Gibson.[3] It is to be regretted that M. Malgaigne has made but mere allusion to the facts which he had gathered; but they were sufficient to warrant him in concluding that ligation of the vein was not more dangerous than that of the carotid artery.

With the exceptions above mentioned, the great majority of cases of ligation of this vein seems to have escaped the attention of surgeons, so much so indeed that Mr. O'Shaughnessy, in reporting his own case, thinks it the first successful instance on record. In this, however, he is greatly mistaken, as ten instances precede him. Although to Professor Simson is due the merit of priority, it will be found that the measure was alluded to, but not carried into effect, before he reported his case in 1747. Thus, in 1563, although we have not been able to find the edition of that year, Thomas Gale writes:—

"The fourth manner of stitching is, when as a veine or arterie is cut, and we use to staie the flux of blood, especiallie when as vene jugularis

[1] Dublin Quarterly Journal. Nov. 1863, p. 268.

[2] Institutes and Practice of Surgery, 8th edition, vol. i. p. 200. Philadelphia: Kay & Bro. 1850.

[3] Op. cit., vol. i., chapter x., pp. 341–346.

is cut. Then we thrust ye needle through that veine or arterie and then knit the same with the threed, then drawe out the needle, and let a portion of the threed hang out so long untill it falleth awaie."[1]

Heister advises to treat small wounds of the internal jugular vein with dry lint, which is to be confined with a compress and roller; but of large wounds he says:—

"I would advise him (the surgeon) to make a pressure upon the divided vein with his finger, and to enlarge the wound upwards and lengthways, till he can come at enough of the vessel to make a strong ligature upon it by the assistance of a crooked needle. By this means the life of the patient may be saved, though the course of the blood through the vessel be entirely cut off. I have often tried this experiment upon a dog, and he has recovered, and never suffered any apparent inconvenience from it; therefore I think it is better to put this doubtful remedy into execution than to leave the case as desperate."[2]

Fabricius ab Aquapendente inculcates the precept of Celsus in speaking of wounds of the carotid artery and internal jugular vein, when he says:—

"Si sanguis sistere non potest, statim debet hamo apprehendere vas vulneratum et attollere, deinde partes utrinque filo ligare, et transversum totum vas præscindere."[3]

Even those authors who are opposed to the general application of the ligature to wounded veins admit that it will be required when the internal jugular is involved. Mr. Erichsen, writing of the introduction of air, advises

"The first thing to be done is to prevent the ingress of air, by compressing the wounded vein with the finger, and, if practicable, securing it by ligature."[4]

It may be inferred from the preceding remarks that the jugular vein will require a ligature to prevent alarming and fatal hemorrhage and as an expedient against the introduction of air, both of which occurrences demand some investigation.

1. *The introduction of air* into the heart through an open jugular vein is much more to be feared than hemorrhage; and the reported cases show that it is more liable to occur when the vein has been opened near its entrance into the brachio-cephalic, as at this point, as well as throughout nearly the whole of the lower third of its extent we have the phenomenon of "venous inspiration," the blood and air being freely sucked into the

[1] Certaine Workes of Chirurgie, newlie Compiled and Published by Thomas Gale, Maister in Chirurgerie. London, 1586. The first Book of the Enchiridion, p. 35.

[2] A General System of Surgery, 2d edition, p. 76. London, 1745.

[3] Opera Chirurgica, p. 251. 1723.

[4] Edinburgh Medical and Surgical Journal, January, 1844, p. 19. Science and Art of Surgery, p. 147. Phila. 1859.

heart at each inspiratory effort. The aspiration of air has been the invariable result of an incised wound, made by the surgeon in the removal of tumours in ten instances, and once in raising up the vein, which had been divided in a suicidal attempt, to tie it. In the latter case the air was heard to enter the vein, but there were no general symptoms referable to the accident. In the cases of Wattmann, Smith, Asmus, Mirault, Brodie, and Erichsen, as may be seen by consulting Table No. II., not only was the peculiar lapping or whizzing noise heard, but there were alarming signs of trouble of the organs within the chest, as immediate syncope, tetanic spasms, and opisthotonos. A fatal result occurred after the application of a thread in the case of M. Mirault only, death ensuing from asphyxia in a little more than three hours. Two other cases of the accident, cured by pressure, have been considered at page 310; and three examples of fatal issue at page 38, January number of this Journal. It is thus seen that the accident is by no means very frequent, or necessarily fatal. The occurrence of eleven cases in eighty-six of wounds of the internal jugular vein, treated of in this paper, gives a ratio of 12.79 per cent.; four cases, or 36.36 per cent., were fatal, while seven cases, or 63.63 per cent., recovered under suitable treatment.

Treatment.—The possibility of air finding its way into the heart through a wounded vein, should teach the surgeon to avoid the accident as much as possible, more particularly in his operative procedures about the root of the neck, where the suction force of inspiration is present. Should an opening be made in that point of the vein, without the necessary precautions having been taken, sudden death may ensue, as happened in the cases of MM. Gorré and Ulrich. The conditions most favourable to the production of the accident are the canalization of the vessel from inflammatory thickening of its walls, preventing their collapse when divided, and a patulous condition when cut through, owing to its normal attachments to the surrounding fascia. When the vein is imbedded in or is firmly attached to a tumour, the accident has usually followed the division of its pedicle; but an incomplete division with traction on the tumour, by which the orifice is kept open, is equally to be feared.

The *preventive* measures refer to the avoidance of all the causes which tend to produce the accident, and the infliction of a wound upon the vessel, so that in the removal of deep-seated tumours of the neck, in which the vein is involved, the precaution must be taken either to compress the vessel with the finger, or to cast a thread around it on the cardiac side of the tumour, before it is divided. This ligature of expedience must never be withheld, no matter what the peculiar views of the surgeon may be in regard to it. The *curative* measures have for their first object the prevention of further admission of air. The vein having been accidentally opened, or completely divided, the finger must at once be placed on the wound and a ligature applied on the cardiac extremity. In this way four of the five

cases of ligation terminated successfully, the amount of air introduced into the circulation not having been sufficient to produce its purely mechanical effect of obstructing the capillaries of the lungs. In all cases in which a ligature is required on the continuity of a vein, two threads will generally be found necessary, with or without the intermediate division of the vessel, the upper one to guard against hemorrhage, the lower to prevent the accident under consideration; and the same remark will apply to those cases where the vein is simply punctured or completely divided. The other means merely refer to those measures employed for alarming syncope, and do not require discussion.

2. *Hemorrhage.*—From the large size of the internal jugular vein, the absence of valves, and from the current of blood passing from above downwards, it is naturally to be expected that a large wound, resulting in complete or almost complete division, will furnish a very large quantity of blood from the peripheral or distal end, as well as from the cardiac end during expiration. In all the cases, where this occurrence has been mentioned, it is stated as having been "very profuse," or "very copious." In the case of Professor Miller, Case VIII., p. 309, the amount was estimated to be about one gallon. In the only case that I have witnessed, occurring in the practice of Professor Gross, a large vein, probably the facial, was sliced off, so to speak, at its point of entrance into the jugular, leaving a large round opening from which a copious and very embarrassing stream of blood escaped, and which was with some difficulty arrested by the application of two ligatures, one above and the other below the opening. Hemorrhage may be the cause of death primarily or secondarily. The former occurrence was seen in but four cases, or in 4.65 per cent. of the whole number; the longest duration of life being a little more than one hour. The case of Mr. Samuel Cooper is interesting from the mode of fatal termination; the subcutaneous hemorrhage having induced suffocation by pressure on the trachea. Secondary hemorrhage was fatal in ten cases, or in 11.62 per cent. of the whole number; six times, or 6.97 per cent., when no ligature was employed, and four times, or 4.65 per cent. when it was adopted, the bleeding having come on in a period varying from four to fifteen days. Taking the whole number of cases then at 86, and the whole number of deaths from hemorrhage at 14, we shall find that hemorrhage has been the cause of death after wound of the internal jugular vein in 16.27 per cent. of all cases. There were in all 37 deaths, which give the ratio of 37.83 per cent. of all the fatal cases referable to hemorrhage.

It is interesting to note that in three cases of wound of the vein the bleeding was reflux, requiring a ligature on the cardiac side only, as the upper end did not emit blood. In other cases where but one ligature was used, the upper end, and not the lower, required deligation. Indeed cases have been reported of the removal of a portion of an internal jugular vein with a tumour, in which there was no hemorrhage from either end, the cavity

of the vessel having become obliterated. A case of this nature occurred to Dr. Danzel, of Hamburg, who removed a portion of the vein with an encephaloid tumour of the neck, without any hemorrhage, the vessel having been closed by the pressure of the tumour.[1]

Treatment.—For the arrest of hemorrhage the ligature has been employed much oftener than compression, and with the best results. The mode of applying the thread has already been referred to; but it is to be remembered that reflux bleeding may occur from the cardiac end, so that it is advisable to use two ligatures in every case, the more so if the wound be closed before the effects of chloroform have passed off, as in such a case it may happen that the divided vein will not bleed until the patient has completely recovered, as was witnessed by Mr. O'Shaughnessy. The precaution must also be taken, in throwing the thread around the lower end, to prevent the introduction of air, which happened to Mr. Erichsen when the vein was raised to tie it.

Temporary ligation may be employed by those surgeons who fear the effects of a permanent thread, to dispense with digital compression when the vein has been wounded. In such an event the bleeding is very embarrassing to the operator in his deep dissections, and as the fingers of an assistant would only be in his way, a thread may be applied with a slip knot, so that it can be removed on the completion of the operation. Or, instead of this, very delicate spring forceps, or the modified serres-fines of M. Vidal, may be used, and will be found to answer a good purpose.

Permanent ligation is the measure which above all others recommends itself in the treatment of wounds of this vein, as it does away with the pain and other inconveniences of compression, as well as acts as a barrier to the extension of local inflammation from unhealthy suppurating wounds, as I have pointed out in the January number of this Journal. The ligature may be applied in two ways, namely, merely to include the wounded part, when it is known as *lateral*, or to include the whole circumference of the vessel, when it may be termed *direct*.

Lateral ligation was first practised by Mr. Travers, in 1816, for a small wound of the femoral vein, and first applied to the internal jugular by Dr. Wattmann, in 1823. It does not obliterate the vessel, as was shown by Mr. Guthrie in his case of suicidal wound. The cut was picked up with a tenaculum, and a delicate thread thrown around it. On the ninth day the man died of exhaustion consequent upon secondary hemorrhage from the common carotid artery, when the vein "was found pervious and without a mark indicating where the ligature had been applied." Professor Pancoast, of this city, advises when a vein is punctured to pass a couple of fine pins through the edges and across the orifice, and to embrace the opening in a delicate silk ligature, and then withdraw the pins;[2] a pro-

[1] Archiv für Klinische Chirurgie, vol. vii., 3d Part, p. 887. Berlin, 1866.

[2] A Treatise on Operative Surgery, p. 47, 3d Edition. Philadelphia, 1852.

cedure manifestly inapplicable to a vein of such magnitude as the internal jugular, as the hemorrhage will prove too embarrassing, and will not admit of the time required to carry the procedure into effect. It will be better to use the common spring forceps to nip up the opening, as the instrument at the same time possesses the advantage of controlling the bleeding. This mode of applying the thread would seem to recommend itself from the fact of its not interfering with the cavity of the vessel, whereas the direct ligature obliterates it.

Lateral ligation is, however, dangerous, and should be excluded from practice.—By referring to the tables of ligation of the internal jugular vein, it will be seen that Cases 22, 23 and 24, in which it was employed, were fatal from secondary hemorrhage towards the sixteenth day; and it is also very probable that it was used in Case 21. Were these cases excluded from the tables, there would be no deaths to record from secondary hemorrhage. It has also proved to be the cause of death in several instances of tied femoral veins, and must, therefore, be discarded from practice; although the successful cases of Guthrie, Bégin, and Wattmann show that it is by no means to be regarded as an entirely unsafe procedure.

Direct or complete ligation was first practised by Professor Simson, of St. Andrews, Scotland, and is the method which should always be employed. Nothing need be said of the mode of applying the thread, as it is merely the ordinary procedure, excepting that the forceps are to be preferred to the tenaculum for picking up the vein, not only to arrest hemorrhage, but to guard against the introduction of air. A delicate silk thread should be used, and one end clipped off close to the knot.

3. *Ligation of the Corresponding Artery.*—In the very interesting paper already alluded to, Professor Langenbeck advises ligation of the corresponding artery for wounds of the internal jugular, axillary, external iliac and femoral veins, when compression has failed to arrest the hemorrhage. He does not favour tying the internal jugular vein, as it entails, he thinks, the dangers of thrombosis and pyæmia, and would prefer giving a trial to ligation of the carotid artery, paying no attention at all to the wound of the vein.[1] Professor Langenbeck considers this a sure means; but by what process of reasoning, with all due respect for the author, I have been unable to discover. Indeed, he seems to have but little confidence in his own statement, since, if he had, he would have trusted to it in the case of the little girl, given at page 69 of his paper, instead of applying two threads to the jugular vein. The suggestion of Professor Langenbeck is not a new one, as Dr. Heineken had alluded to it in connection with the case detailed at page 311, in which the internal jugular had been opened to the extent of half an inch, just below the base of the skull. He remarks: "The only chance of preventing the accident from proving fatal

[1] Archiv für Klinische Chirurgie, Band i. p. 52 *et seq.*

consisted in permanently reducing the supply of blood to the brain. This might have been attempted by tying the carotid on the same side, and, had evidence of pressure on the brain still continued, by putting a ligature around the other carotid also."[1]

The ligation of one carotid artery does not prevent the access of blood to the brain, as the ligation of the femoral artery would cut off the supply of blood from the lower extremity. The intra-cranial circulation is peculiar; there is a free communication between all the vessels, a wise provision, which, if it did not exist, would leave us no remedy for wounds of the vessels of the neck. Ligation of both carotids might answer the purpose, as suggested by Dr. Heineken, as the blood carried into the brain would have to traverse the vertebral arteries, which being contained in bony canals would not enlarge. The supply of blood through these channels being small, time might be given for the wound of the vein to heal; but no one, I presume will be found bold or foolish enough to carry the suggestion into effect when a ligature on the vein or compression will accomplish the object. In the last case of the second table, in which a cyst was removed from the neck, the carotid artery was laid bare to a short extent, and gave me an opportunity of compressing it firmly against the spine. I need hardly say that it had no effect whatever on the bleeding jugular. It may be added, however, that the procedure advised by Professor Langenbeck has been attended with success in wounds of the veins of the extremities, and that he has supported his opinion by the narration of a case of wounded femoral vein, the coats of which were so brittle as not to hold a thread. The hemorrhage was rebellious, but was stopped by ligating the femoral artery. I have collected several analogous cases, which will be reported at a future date.

Effects of Ligatures on Veins.—There is a very decided difference of opinion in regard to the action of a ligature upon the coats of a vein. Mr. Hodgson says: "When a vein is tied with a thin ligature, the internal surface of the vessel is lacerated;[2] and Mr. Travers demonstrated that "a ligature does not divide the internal tunic of a vein either in man or animals."[3] This non-division of the lining membrane had been pointed out by Bichat;[4] but Mr. Travers also showed that it was thrown into longitudinal folds, and that "it appears as if the outer or cellular coat only was divided;" an opinion that has been generally adopted by the profession. From some experiments upon the larger human veins, which may be repeated and verified by any one, I have been led to different conclusions. When a delicate, strong, and well-waxed silk thread is drawn as tightly as possible around a vein, its coats become plicated or thrown into

[1] Edinburgh Med. and Surg. Journ., vol. xxx. p. 104, 1828.
[2] On Diseases of Arteries and Veins, p. 555.
[3] Essay cit., p. 201.
[4] General Anatomy. Translated by Dr. Hayward. Vol. i. p. 402. Boston, 1822.

longitudinal folds or plaits. Upon slitting open the vessel, these folds are seen to be well marked, but without any division of the tunics; and upon holding the vessel between the eye and light, a decided transverse furrow or indentation, corresponding with the site of the ligature, is observable, which would, at first sight, seem to be due to injury of one or more of its coats. The external and internal tunics can be made to glide over the furrow by the finger, showing that some lesion exists in the middle coat, and a mere superficial examination will lead to the opinion that it has been completely divided. A more minute inspection and dissection, however, clearly disclose that the inner layer, consisting of circular elastic fibres, only has been cut, or rather separated, leaving the longitudinal fibres unharmed and closely connected with the uninjured external tunic. With the exception then of the impression made upon a portion of the middle layer, none of the coats of the vein suffer division. The external tunic seems to be as strong as that of an artery in resisting the ligature; the middle coat differs from that of an artery in having longitudinal as well as circular fibres, the former being composed of white fibrous tissue with elastic fibres, the latter of elastic fibres arranged in the same manner as those of an artery, with an admixture of a large quantity of unstriped muscular fibres. The inner tunic is more dense and tough, but not nearly so lacerable as that of an artery, and can be stripped off the middle coat much more readily and to a greater extent. I have, indeed, peeled off one unbroken surface of upwards of two inches from the inferior cava, and on applying a ligature to it, it suffered no division. It is thus seen that the anatomical structure of a vein materially differs from that of an artery, and that, when tied, none of its coats are divided, as is the case with the latter vessel. It is, moreover, easy to conceive that the walls of the vein being thrown into folds, offer a mechanical obstacle to their own division by a tightly drawn thread.

From the experiments of Mr. Travers[1] upon the jugular vein of the horse, it is found that up to the sixth day the vein on each side of the ligature is thrown into longitudinal folds, the lower portion being empty, collapsed, and uninflamed, the upper extremity being filled with a firm coagulum of several inches in extent. The lining membrane shows not only no blush, but no signs of adhesive inflammation or adhesion of the contiguous folds, while the cellular sheath of the vein is thickened by a deposit of lymph in the vicinity of the ligature. The appearances are the same when the vessel is divided between two ligatures, the division permitting the ends to retract to the extent of an inch. At seven days the effusion of lymph into the cellular tissue around the ligature is increased, and the thread is surrounded by adhesive matter external to the vessel. At nine days ulceration of the venous walls begins, and the separation of the

[1] See Surgical Essays, London, 1818, Part I. p. 273, *et seq.*

ligature is accomplished in a period of from fifteen to twenty-five days. In a young and healthy horse the thread came away on the twenty-fifth day.

"The ulcerated ends of the vein formed a crescentic sweep, and were separated to the extent of an inch, and fastened by adhesion to the cellular sheath, which was much extended and thickened by a subjacent deposition of lymph, so as to form a smooth, solid bed between the divided ends of the vein. The internal membrane of the superior portion of the vein had a thin, ragged edge where it had been severed by ulceration. The lower edge was smooth and blended in with the bed of the wound. The extremities had undergone no contraction but that produced by the adhesion of the severed extremity to the sheath. The portion of the vein next the heart was empty. The upper was filled by a dark lamellated coagulum of blood, adhering very strictly to the internal tunic which was discoloured by it. On carefully separating the outer lamella which coated the interior of the vein, I could not discover any thickening of the proper coats of the vein, nor any appearance of inflammatory action within its canal, nor was any such appearance indicated in the lower portion of the vein." pp. 274–5.

From the above changes in the coats of the vein, Mr. Travers infers that the internal coat is little susceptible of inflammatory action, and that the healing process, as well as the dropping off of the ligature by ulcerative action, is conducted without any appreciable sign of inflammation of the lining membrane. Indeed, he says "the veins do not adhere after being tied; nor do their wounds under ordinary circumstances cicatrize immediately, nor do the cut ends contract and inflame." These opinions are opposed to those of Bichat, Mr. Hunter, Mr. Hodgson, Dr. Mackenzie, and other observers, and the phenomena described by Mr. Travers are undoubtedly due, if not to inflammation, to an irritation closely allied to that condition.

Finally, to sum up the changes produced by the application of a ligature, it is found that none of the tunics are divided; that the blood in the interior of the vessel becomes consolidated on the distal side of the thread; that adhesive inflammation sets in, followed by effusion of plastic material in the coats of the vessel, between the coagulum and the lining membrane, and in the surrounding tissues; that the vessel on the proximal side is closed without the formation of a coagulum; and that the clot undergoes various changes, becomes organized, and with the corresponding walls of the vessel is ultimately converted into a firm fibro-ligamentous cord.

Collateral Circulation.—As some bad consequences, namely—capillary venous congestion, serous effusion, apoplexy, softening of the brain, paralysis, and œdema of the soft parts—have been referred to the sudden interruption of the return of venous blood from the brain and its membranes to the heart, by the application of a ligature to the internal jugular vein, it will be necessary to glance at the collateral circulation. Some of the cases have been attended by signs of venous congestion, but there is an

anatomical arrangement by which the brain escapes danger. All the sinuses of the dura mater communicate with each other at the torcular Herophili, from which the lateral sinuses pass to the posterior lacerated foramina, to become the internal jugular veins, so that if one be obstructed the current of blood is directed to that of the opposite side. The anterior and external jugular veins are supplemental trunks and have free communications with the former set. The veins of the walls of the cranium have a direct anastomatic communication with the sinuses of the dura mater, and the rachidian system of veins also freely inosculates with the cerebral veins, so that they afford great aid to the circulation. Of the latter plexus, indeed, M. Cruveilhier remarks: "If all the jugular veins were obliterated, the venous circulation of the head would still continue, and would be carried on by the spinal veins."[1]

It is thus obvious that when one internal jugular vein is tied, the blood will find its way to the heart by the internal jugular of the opposite side, and by the external jugular of the same side. The latter vein I have seen, in several cases of tumours of the neck compressing the deep jugular, very much enlarged and tortuous, and that condition is, therefore, to be considered as the best diagnostic sign of the internal jugular being involved by morbid growths. From these considerations, and from the fact that many cases of obstruction of one jugular vein by tumours have been unattended by signs of cerebral congestion, that state is not to be anticipated whenever a ligature is deemed necessary; although, as will be seen hereafter, the procedure gave rise to symptoms denotive of the occurrence of venous congestion in one instance.

In addition to the above indirect anastomoses, a beautiful example of direct communication between the ends of a tied jugular vein of a horse, has been observed by MM. Renault and Bouley. The animal was killed thirty days after ligation of both internal jugulars. Two collateral veins arising above had carried on the circulation; but whereas, before ligation, they had carried blood to the jugular, their function was now changed, since they received the blood from its upper end, and carried it to a venous network developed entirely around the tied vein at the site of the thread. This venous rete was composed of vessels of the size of small quills, freely communicating with each other, their united diameters being fully equal to that of the obliterated vein itself. Two other main trunks left this network, and emptied into the lower end of the jugular below its point of obliteration.[2]

From the above description this case would, I think, resemble the figure of a tied carotid artery, delineated by Dr. Ebel, in which precisely the

[1] Anatomy of the Human Body. Amer. edition, p. 611. New York, 1844.

[2] Recueil de Médecine Vétérinaire, vol. xvii. p. 547; and Malgaigne, vol. i. p. 340.

same condition existed.[1] A similar anastomosis between the ends of the femoral vein of a dog, which was killed on the thirty-seventh day after ligation of that vessel and the femoral artery, is described by Dr. Jones. "The vein was obliterated to a greater extent than the artery, and the superior and inferior portions communicated freely by branches which went from one to the other."[2]

The following are brief abstracts of all the cases of ligation of the internal jugular vein which I have been able to collect. Twenty-eight refer to the extirpation of tumours; five to suicidal wounds; one to gunshot wound; two to stabs; two to ligation of the carotid artery; and in three cases the cause is not mentioned. For more easy consultation, as well as to point out the sources from which they have been gathered, the cases are separated into two tables; one relating to the vein alone, the other to the vein and the carotid artery; an arrangement which has been deemed necessary for the proper appreciation of some of the assumed dangers of ligation. It is to be remarked that there is one case on record, which has not been used in this paper as it has no practical value in a statistical inquiry, of *ligation of the vein by mistake*. Mr. Crisp reports it as follows: "A case has recently come to my knowledge where a surgeon tied the vein instead of the artery, and the mistake was not discovered until after death. The patient was a child, and the operation was required for hemorrhage, resulting from an abscess in the neck."[3] The result of such treatment would necessarily be an increased instead of diminished flow of blood.

CASE I.—Dr. Thomas Simson, Professor of Medicine in the University of St. Andrews, Scotland, records the first instance of the application of a ligature to the internal jugular vein, which was required during the extirpation of an ulcerated tumour of the right side of the neck, in which the vessel was imbedded. Professor Simson says: "In dissecting out this tumour, I laid the carotid artery bare for about two inches, and plainly saw its pulsation; as it sends out no branches about this part of the neck, I wrought with greater resolution. From the upper part of the tumour a cartilaginous process went to the larynx, to which it was strongly attached. In cutting this away, there was a strong jet of blood from an artery, which soon stopped, after the application of spirit of wine to it, so that I went on with the dissection of the tumour from the vein downwards. After laying the vein bare a considerable way, I found it confounded at the lower part with the substance of the tumour; and therefore, putting a ligature around the vein, I tied it, and then cut away the remaining part of the tumour below, except a small part, in which I thought the vein was involved, expecting the ligature would make this fall off; but seeing no appearance of such a separation, after eight days, I cut it through immediately below the ligature, and found vein and all quite solid, of a cartilaginous firmness. After this hard substance was all taken away, the large cavity where the tumour had been lodged filled up very fast, so that the wound was cicatrized in six weeks."

CASE II.—Mr. Simmons, of Manchester, England, "has also published a case in which he tied the internal jugular vein. In this case a large tumour on the

[1] De Natura Medicatrice sicubi Arteriæ Vulneratæ et Ligatæ Fuerunt. Giess. 1826.

[2] Treatise on Hemorrhage, p. 150. London, 1805.

[3] Op. cit., p. 217.

left side of the neck extended from the outer margin of the sterno-cleido-mastoideus muscle nearly to the shoulder. The tumour was extirpated. 'The divided arteries bled freely, but the blood rushed in a torrent from the internal jugular vein, which had been divided in the operation.' The vein was tied with three ligatures, which came away in due time without hemorrhage, and the parts healed in about two months. In this case it was remarked that no morbid affection of the head was the consequence of the obliteration of the internal jugular vein."

CASE III.—Dr. Richter, treating of wounds of the neck, in his "Aufansgründe der Wundarzneykunst," states that the internal jugular vein has been ligated with a happy result.

CASE IV.—Professor Wattmann, of Vienna, applied a lateral ligature to the right internal jugular, in removing a tumour of the neck. Although air had entered the vein, the patient gradually recovered, his left upper and lower extremities having been paralyzed for several days. The thread came away on the twelfth day.

CASE V.—Professor Stevens, of New York, embraced the internal jugular vein with two threads, above and below the entrance of a large divided vein, during the extirpation of an adenoid tumour of the neck. The patient recovered, and the ligatures came away on the fourteenth day.

CASE VI.—The late Professor Mott removed a tuberculated sarcomatous tumour of the neck, the hemorrhage requiring the ligation of the internal and external jugular veins and the external carotid artery. A small portion of the growth was included in the ligature around the internal jugular, and the woman recovered.

CASE VII.—Professor Gibson, of this city, tied the internal jugular with two threads, and divided the vessel between them, in the extirpation of an adenoid tumour of the neck. Previous to the operation the common carotid artery was ligated as a precaution against hemorrhage, and during the operation the descendens noni nerve was cut across, as it was in the way. The threads were pulled away from the vein on the thirty-third day, and the ligature came away from the artery three days subsequently. The boy made a good recovery.

CASE VIII.—Dr. J. G. Morgan, of New York, applied two ligatures to the internal jugular, which had been divided in about three-fifths of its circumference in an attempt at suicide. The bleeding was frightful, but the man's life was saved, the threads coming away on the eighth and tenth days.

CASE IX.—The late Professor J. C. Warren, of Boston, during the removal of a tumour, tied the internal jugular with two threads, a portion of the vein being left in the growth. The common carotid artery was also ligated, and the patient recovered.

CASE X.—M. Mirault, of Angers, removed a tumour from the neck. Air was aspired, and a ligature was applied on the cardiac side to prevent its further ingress. Death ensued in three hours. For farther particulars see Case III. of fatal cases from introduction of air, in the January number of this Journal.

CASE XI.—Dr. Asmus opened the internal jugular vein in an operation for the removal of a tumour of the neck, and air was aspired, followed by immediate syncope with convulsions and violent opisthotonos. The patient recovered from the primary effects of the introduction of air in twelve minutes, under the use of stimulants, pressure having been kept up with the finger applied to the orifice of the wounded vessel. The upper end of the vein was tied, and the man made a good recovery.

CASE XII.—Dr. A. B. Mott, of New York, included the internal jugular in two threads, a piece of the vessel having been cut out in a suicidal attempt.

When first seen, the young man was pulseless from loss of blood, and had to be resuscitated by artificial respiration. He however recovered, the ligatures coming away on the twelfth and thirteenth days.

CASE XIII.—M. Maisonneuve, of Paris, tied the distal end of the internal jugular vein, which had been divided in the removal of an enormous tumour of the neck. The man recovered.

CASE XIV.—M. Widmer, on the authority of M. Velpeau, has successfully ligated the internal jugular.

CASE XV.—M. Gély, on the authority of M. Malgaigne, met with recovery after ligature of the internal jugular.

CASES XVI., XVII.—M. Sédillot has in two instances ligated the internal jugular, leaving a portion of the vein in glands of a suspicious nature. Both patients recovered.

CASE XVIII.—M. Bégin, on the authority of M. Legouest, had a successful issue in a case of lateral ligature of the internal jugular.

CASE XIX.—Professor Barovero, of Turin, accidentally included the *left* internal jugular vein in the ligature of the common carotid for the suppression of hemorrhage from an encephaloid tumour situated behind the right angle of the jaw. Up to the tenth day there was giddiness, spectral delirium, and palsy of the left side of the mouth and the left hand. On the sixtieth day, symptoms of gastric fever set in, which speedily assumed the tertian form, and "acquired a pernicious character in the course of a few days, with loss of sensation, sopor, and death on the sixty-ninth day after the operation." The brain and its vessels were found in a state similar to that of chronic inflammation; and the anterior part of the *right* lobe was covered by a fluid similar to a puriform exhalation.

CASE XX.—Mr. Guthrie tied the internal jugular laterally in an attempt at suicide. The cut was picked up with a tenaculum, and a fine thread applied. The common carotid artery was nicked transversely, but the incision did not extend beyond the middle coat. On the eighth day hemorrhage took place from the artery, which was cut down upon and ligated, but the patient died on the following morning from exhaustion. "The internal jugular was found pervious, and without a mark indicating where the ligature had been applied."

CASE XXI.—M. Giraud has recorded a case in which a French military surgeon, at Toulouse, tied the trunks of the internal jugular and common carotid for a gunshot wound. The man had no unfavourable symptom as far as the sixth day; but it is not stated whether he recovered.

CASE XXII.—M. Labat, on the authority of M. Larrey, in his "*Mémoire sur l'Adénite Cervicale*," ligated the internal jugular and common carotid, and divided the pneumogastric nerve in removing a very large scirrhous tumour of the neck, and the patient recovered in six weeks. The external jugular was also tied.

CASE XXIII.—Sir Benjamin Brodie applied two ligatures to the internal jugular in the removal of a tumour. Air had gained admission into the vein, but the patient recovered.

CASE XXIV.—Mr. Erichsen tied the internal jugular above and below a wound made in a suicidal attempt. The man made a good recovery, notwithstanding air was heard to enter the vein when it was raised to tie it.

CASE XXV.—Professor Pancoast, of this city, applied two ligatures to the internal jugular in extirpating the parotid gland. The internal carotid artery was also tied, and the man recovered.

CASE XXVI.—Professor N. R. Smith, of Baltimore, tied the internal jugular on its cardiac side, near its termination, on account of appalling recurrent hemorrhage in the removal of a medullary sarcoma of the neck. The vessel was involved in the disease; its coats soft and brittle, and, near its junction with the subclavian vein, had been largely rent by the slight traction made upon it. Air had been aspired. Death from exhaustion on tenth day. "It is manifest, therefore, that he could not have died from phlebitis, which by some is supposed almost necessarily to arise from the application of ligatures to veins of such very large size, and in a diseased condition."

CASE XXVII.—M. Sanson, on the authority of M. Malgaigne, reports a fatal case from hemorrhage upon separation of the ligature of the internal jugular.

CASES XXVIII., XXIX., XXX.—M. Roux, on the authority of M. Nélaton, tried lateral ligature of the internal jugular in three cases. The threads came away towards the sixteenth day, and all perished from secondary hemorrhage.

CASE XXXI.—Dr. Neudörfer, of the Austrian army, in a conversation with the author of this paper, early in August, 1866, remarked that he had applied two ligatures to the internal jugular during the removal of a tumour of the neck, and that death ensued from causes unconnected with the procedure. In fact, the post-mortem inspection showed that the vein had undergone no change whatever.

CASE XXXII.—Professor Schuh, on the authority of Dr. Neudörfer, tied the internal jugular with two threads in extirpating a tumour of the neck. The patient died, but the vein was healthy.

CASE XXXIII.—The late Professor Mott, in the removal of a very extensive glandular tumour of the neck, tied both ends of the internal jugular. About three inches of the vein were imbedded in and taken away with the mass. The middle third of the sterno-cleido-mastoid muscle was also removed, and the boy, five years of age, made a rapid recovery.

CASE XXXIV.—Professor Langenbeck, of Berlin, in a case of extirpation of the tumour of the neck, applied two ligatures to the internal jugular, a portion of which was exsected with the mass. The girl died on the twenty-fifth day, having had all the symptoms of pyæmia. A post-mortem examination was not permitted.

CASE XXXV.—Professor Langenbeck wounded the internal jugular during the removal of an epithelial cancer, and placed a thread on the cardiac end only, there being no bleeding from the distal extremity. The common carotid artery being intimately connected with the morbid growth was included in two ligatures and divided. At the time of the operation the man was suffering from bronchitis, from which he died on the twelfth day.

A post-mortem examination showed the vein completely healed as if by the first intention, without the slightest trace of redness, thickening of its walls, or the formation of a clot. The vessels of the dura mater and surface of the brain were slightly injected, and there was a little serous effusion at the base of the skull. The lungs were slightly œdematous, and at the apex of the right lung there were old tubercular deposits. The bronchial tubes were filled with mucus, and there were some pleural adhesions.

CASE XXXVI.—Professor Langenbeck reports a case similar to the above, in which the internal jugular and common carotid were tied. The man was sixty-five years of age, and the puncture of the vein was very small. As the bleeding from the upper end ceased of itself when the cardiac side was ligated, nothing was done to it. Towards the completion of the operation, there was significant hyperæsthesia, so that the patient complained greatly on stitching the wound. His pulse was weak, but the temperature on each side of the head was the same. He gradually sank and died at the expiration of forty-eight hours. An accurate examination of the ligatured vessels showed nothing

abnormal. A nerve had been included, thus accounting for the increased sensibility. The lungs were œdematous, and the bronchial tubes contained a slight quantity of mucus. The brain and other organs were normal.

CASE XXXVII.—Professor Gross, in August, 1866, removed an encysted tumour of the neck. During the dissection, a large vein emptying into the internal jugular was divided so close to the latter that two ligatures were thrown around it above and below the opening on account of the very profuse hemorrhage. The man made a good recovery, and had not a single untoward symptom. The threads came away on the tenth day.

CASE XXXVIII.—Mr. O'Shaughnessy removed a large tumour of the right side of the neck together with a portion of the internal jugular vein, which was firmly adherent to it. Two ligatures were applied. The man recovered, and the vein did not bleed until the effects of chloroform had passed away.

CASE XXXIX.—MM. Marcé and Mounier applied two ligatures to the internal jugular vein which had been nearly divided in a suicidal attempt. One ligature came away on the sixteenth day, and the other was remaining in the wound, which had completely cicatrized on the thirty-third day. Recovery.

CASE XL.—Dr. John Watson, of New York, tied with separate threads the left internal jugular vein and primitive carotid artery of a woman who had been stabbed in the neck and who had lost much blood, but without arresting the arterial hemorrhage. Death ensued from softening of the brain at the expiration of fifty-seven hours, when the ligatures were seen to be in position, and the hemorrhage was found to have proceeded from the vertebral artery, which was nearly divided about half an inch above its origin.

CASE XLI.—Dr. Zeis, of Dresden, tied the *left* common carotid for nævus in an infant *fifteen months* old. On opening the sheath and exposing the internal jugular vein there was a gush of venous blood, which was stopped by creasote water. "The vein which had been tied swelled so much as to excite fear of its bursting, and was therefore tied again higher up, after which the artery was tied with a silk thread." The tumour immediately became swollen and shrivelled up; after seventy-two days the wound had healed. On the fourth day the ligatures came away from the vein, followed in twenty-four hours by venous bleeding, which recurred six times in the course of the next twenty-four hours, but each time was arrested by creasote water. "About a week before the complete healing of the wound, the child was attacked suddenly with convulsions and *hemiplegia of the right side;* these symptoms continued with increasing activity, and on the forty-ninth day after the attack of convulsions, the child died." No examination was allowed.

TABLE II.—*Cases of Ligation of the Jugular Vein alone.*

Case.	Operator.	Authority.	Mode of ligation.	Cause.	Result and cause of death.	Observations.
1	Simson, 1747	Med. Essays and Observations, vol. 5. Part I. 3d ed., p. 335. Edinburgh, 1747	One thread distal side	Removal of tumour	Recovery	First recorded case. Ligature cut away on the eighth day.
2	Simmons, 1791	A Treatise on the Diseases of Arteries and Veins. By Joseph Hodgson. p. 535. London, 1815	Three ligatures	Removal of tumour	Recovery	
3	Richter, 1797	Aufangesgründe der Wundarzneykunst. Band 4, p. 173. Göttingen, 1797	....	Wound of neck	Recovery	
4	Wattmann, 1823	Cormack's Monthly Journal of Med. Science, 1844, p. 783	Lateral	Removal of tumour	Recovery	Longitudinal opening to the extent of two and a half lines. *Air was aspired*, followed by immediate syncope; recovery gradual; paralysis of left extremities for several days. Ligature came away on the twelfth day.
5	Stevens, 1830	Cooper's Surgical Dictionary, Am. ed. Supplement, p. 165. New York, 1842	Two threads	Removal of tumour	Recovery	The threads came away on the fourteenth day.
6	Smith, 1834	Baltimore Med. and Surg. Journal, July, 1834	One thread cardiac side	Removal of tumour	Death from exhaustion	No signs of phlebitis. *Air had entered the heart*, and the patient fell back inanimate. Sucking noise heard.
7	Morgan, 1836	Am. Journ. Med. Sciences, vol. xviii. p. 330. 1836	Two threads	Cut-throat	Recovery	The vein was more than one-half divided, and the loss of blood was profuse. The upper ligature came off on the eighth day, the lower on the tenth day.
8	Mirault, 1837	Compendium de Chirurgie Pratique, vol. i. p 80. Paris, 1840	One thread cardiac side	Removal of tumour	Death in 3 hours from introduction of air	Ligature was applied to prevent *further aspiration of air*. Whizzing noise heard and tetanic spasms. Recovery from effects of air in eight minutes; but death from asphyxia.
9	Asmus, 1842	American Journ. Med. Sci., Jan. 1843, p. 220.	Two threads	Removal of tumour	Recovery	*Air was aspired.* Syncope, convulsions, violent opisthotonos. Recovery from effects of air not complete until fourteen hours had elapsed.
10	Erichsen, 1844	Edinburgh Med. and Surg. Journal, p. 19. January, 1844	Two threads	Cut-throat	Recovery	Air entered the divided vein when it was raised to tie it.
11	O'Shaughnessy, 1848	London Lancet, June 23, 1849, p. 661	Two threads	Removal of tumour	Recovery	Portion of vein excised with tumour. *No bleeding until effects of chloroform were passing away.*
12	V. Mott, 1848	Transactions of New York Academy of Medicine, vol. i. p. 90. 1857	Two threads	Removal of tumour	Recovery	About three inches of the vein were imbedded in and removed with the tumour.
13	Brodie, 1849	London Medical Gazette, vol. ix. n. s. p. 266. 1849	Two threads	Removal of tumour	Recovery	*Air aspired.* Sudden syncope, and patient thought to be dead.
14	Marcé & Mounier, 1854	Revue Méd.-Chir. de Paris, vol. xvi. 1854, p. 245	Two threads	Cut-throat	Recovery	Vein nearly divided. One thread came away on the 16th day; the other remaining on 33d day, when wound nearly healed.
15	A. B. Mott, 1855	Am. Med. Monthly, Nov. 1856, p. 326	Two threads	Cut-throat	Recovery	A portion of the vein had been cut out, and the man was nearly dead when seen. The threads came away on the twelfth and thirteenth days.
16	Maisonneuve, 1855	Gaz. Médicale de Paris, p. 492. 1855	One thread distal side	Removal of tumour	Recovery	

TABLE II.—*Cases of Ligation of the Jugular Vein alone.* (Continued.)

Case.	Operator.	Authority.	Mode of ligation.	Cause.	Result and cause of death.	Observations.
17–18	Sédillot, 1855	Traité de Médecine Opératoire, p. 193. Paris, 1855	Two threads	Removal of tumours	Recovery	Portion of veins excised with the tumours.
19	Widmer, 1856	Velpeau's Operative Surgery, 4th Am. ed. Vol. i. p. 869. New York, 1856	....	....	Recovery	
20	Gély, 1859	Traité d'Anatomie Chirurgicale et de Chirurgie Expérimentale. Par J. F. Malgaigne. Vol. i. p. 342. Paris, 1859	....	....	Recovery	
21	Sanson, 1859	Malgaigne, ut supra, p. 342	One thread (lateral?)	....	Death from hemorrhage	
22–23–24	Roux, 1859	Malgaigne, ut supra, p. 343	Lateral	Removal of tumours	Death from secondary hemorrhage	Ligatures came away towards the sixteenth day.
25	Langenbeck, 1859	Archiv für Klinische Chirurgie, Band i. p. 69. Berlin, 1860	Two threads	Removal of tumour	Death from pyæmia on 25th day	Portion of vein removed with tumour. Threads came away by light traction on the twenty-third day. *No post-mortem examination;* but symptoms of purulent infection during life. Some œdema of the face.
26	Bégin, 1863	Legouest. Traité de Chirurgie d'Armée, p. 429. Paris, 1863	Lateral	Removal of tumour	Recovery	
27	Neudörfer, 1866	Verbal communication to the author	Two threads	Removal of tumour	Death from exhaustion	Vein had undergone no change whatever, so that the ligatures had nothing to do with the fatal issue.
28	Schuh, 1866	Dr. Neudörfer	Two threads	Removal of tumour	Death from exhaustion	Cause of death not connected with ligatures.
29	S. D. Gross, 1866	Unpublished case witnessed by author	Two threads	Removal of tumour	Recovery	Threads came away on tenth day. Not a single bad symptom.

TABLE III.—*Cases of Ligation of the Internal Jugular Vein and Carotid Artery.*

Case.	Operator.	Authority.	Mode of ligation.	Causes.	Artery ligated.	Result.	Observations and post-mortem appearances.
1	V. Mott, 1832	Am. Journ. Med. Sci., vol. xii. p. 121. 1833	One ligature	Removal of tumour	Ext. carotid	Recovery	Ext. jugular also tied. No cerebral disturbance.
2	Barovero, 1835	Edinburgh Med. and Surg Journ., vol. xliii. p. 483. 1835	One ligature including artery	Hemorrhage from encephaloid tumour of neck	Com. carotid	Death on 69th day from gastritis and pernicious fever	Immediate signs of cerebral trouble; giddiness, spectral delirium, and palsy of left side of mouth and left hand. Continued for ten days. On 60th day symptoms of gastric fever; became pernicious, with loss of sensation; sopor, and death in 9 days. "Upon inspection the brain and its vessels were found in a state similar to that of chronic inflammation: and the anterior part of the *right* lobe was covered by a fluid similar to a puriform exhalation." *Left* vessels tied.
3	J. Pancoast,	Verbal communication to the author	Two ligatures	Extirpation of parotid gland	Internal carotid	Recovery	No cerebral disturbance.

Case.	Operator.	Authority.	Mode of ligation.	Causes.	Artery ligated.	Result.	Observations and post-mortem appearances.
4	Guthrie, 1830	Diseases and Injuries of the Arteries, p. 328. London, 1830	Lateral ligature	Cut-throat	Com. carotid on 8th day	Death from exhaustion the result of arterial hemorrhage	The artery had been nearly divided at time of suicidal attempt. "*The internal jugular was found pervious, and without a mark indicating where the ligature had been applied.*"
5	Labat, 1834	Mémoires de l'Académie Royale de Médecine, vol. xvi. p. 360. Paris, 1852	One ligature	Removal of tumour	Com. carotid	Recovery	Pneumogastric nerve divided. Ext. jugular also tied. Cure complete in six weeks, with some nervous and hemorrhagic accidents.
6	A French surgeon mentioned by Giraud, 1850	Gibson's Surgery, 8th ed., vol. i. p. 200. Phila., 1850	One ligature including artery	Gunshot wound	Com. carotid	Uncertain; but did well up to 6th dy. No fur. hist.	
7	Langenbeck, 1859	Archiv für Klinische Chirurgie. Band i. p. 73. Berlin, 1860	One ligature cardiac side	Removal of tumour	Com. carotid 2 ligatures & division bet. them	Death from bronchitis on 12th day	Intellectual faculties unimpaired, and no signs indicative of obstruction to cerebral circulation. Vein completely healed without trace of clot, redness, or thickening of its walls. Old pleural adhesions. Bronchial tubes filled with mucus; lungs œdematous, and at apex of right lung old tubercular deposits. Vessels of dura mater and surface of brain slightly injected: a little serum effused at base of skull. Other organs normal. Firm clot in the carotid.
8	Langenbeck, 1859	Ibid., p. 77	One ligature cardiac side	Removal of tumour	Com. carotid 2 ligatures & division bet. them	Death in 48 hours. Man gradually sank	Temperature of both sides of head and neck the same. Intellect and special senses unimpaired. An accurate examination of the ligated vessels showed nothing to account for the fatal result. There was marked œdema of the lungs, and the bronchial tubes contained some mucus. The brain and other organs were normal.
9	Gibson, 1832	Am. Journ. Med. Sci., vol. xiii. p. 305. 1833	Two ligatures and division bet. them	Removal of tumour	Common carotid. One thread, as a precaution against hem.	Recovery	Ligatures pulled from vein on the 33d day. Ligature came away from carotid five days later. The descendens noni nerve was in the way and was divided. No cerebral disturbance.
10	J. C. Warren, 1837	Surgical Observations on Tumours. Boston, 1837. p. 177	Two ligatures	Removal of tumour	Com. carotid one thread	Recovery	A portion of the vein left in the tumour. The vessels of right side had been ligated. Following morning some delirium. Temperature of right side of head lower than the opposite. Left pulse very feeble. Great difficulty in moving left arm and leg, but not exactly paralysis.
11	Watson, 1853	New York Journal of Medicine, July, 1857. p. 40	One thread	Stab in the neck	Left common carotid one thread	Death from acute softening of the brain	Operation on evening of 5th of October. In 48 hours somnolency, bordering on coma, followed in 4 hours by hemiplegia of right side, and strabismus. Death at 1 o'clock, morning of 8th. Ligatures in position on artery and vein. The hemorrhage which had defied the carotid deligation was found to have proceeded from the vertebral artery which was nearly divided about one half an inch above its origin. "The substance of the brain appeared, in places, to have been somewhat softened. The pleura of both sides was found inflamed, and contained a considerable amount of sero purulent fluid."
12	Zeis, 1847	Chelius's System of Surgery, vol. ii. p. 508. Phila., 1847	Two threads	Ligation of carotid for vascular nævus	Left common carotid, one thread	Death on 114th day from softening of brain	Ligatures came away on 4th day, and on following night considerable venous bleeding, recurring 6 times in next 24 hours, but arrested by creasote water. Wound had healed in 72 days, but about a week previously child was attacked with convulsions and hemiplegia of right side. These symptoms continued with increasing debility, and on the 44th day after the attack of convulsions the child died. No post-mortem examination was allowed.

Simultaneous Ligation of the Carotid Artery and Internal Jugular Vein.—There are some points in connection with the third table which demand separate examination, as it has happened in twelve cases of removal of tumours and wounds of the neck, that not only the vein, but also the common carotid artery, or one of its branches, has required the ligature. It has been supposed that, when such an event occurs, the dangers to be apprehended from the disturbance to the cerebral circulation are so much enhanced as greatly to invalidate the chances of success, and that gangrene, as evinced by softening of the brain, would ensue. This precept has been inculcated as strenuously as that of mortification of the lower extremity following obliteration of its main arterial and venous trunks. Professor Velpeau, in his remarks on the operation of tying the carotid, says :—

"If, unfortunately, the internal jugular vein should happen to be opened, I do not know whether it would be better to tie it, or to stop the hemorrhage by tents. But to say nothing of phlebitis, which, in this case —ligation—is the most formidable consequence to apprehend, who would not hesitate in obliterating so large a vein, at the same time with the principal artery of the head?" (*Op. cit.*, vol. i. p. 869.)

Professor Gross uses the following language in regard to the treatment of carotid aneurism by compression :—

"It cannot be brought into play here, the parts being intolerant of the requisite manipulation, to say nothing of the obstruction which it would occasion to the return of blood in the internal jugular vein, which, being dammed up in the brain and sinuses of the dura mater, might speedily induce apoplexy, or other serious cerebral symptoms, endangering the patient's life." (*Op. cit.*, 4th ed., vol. i. p. 717.)

When the carotid artery alone is tied, it is obvious that there is less blood sent to the head than in the normal condition, and that, as a consequence, there will be capillary cerebral anæmia until the anastomotic circulation is fully established. This disturbance of the cerebral circulation is often followed by immediate or remote symptoms of functional or organic lesions of the brain, and of the latter, atrophic softening from deficient arterial supply, or acute or chronic inflammatory softening are the most common pathological states.

Brain trouble, according to Mr. Erichsen (*op. cit.*, p. 633), as indicated by immediate or remote symptoms, has been present in about one-fifth of the cases, one-half of which were fatal. Dr. Ehrmann's statistics show that 42 instances of cerebral disturbance of some kind ensued from ligation of one carotid in 184 cases, the percentage being about 22.

If the internal jugular vein of one side be tied, or the return of blood be interfered with by compression, congestion of the brain may ensue. The case of Dr. Heineken goes to show that the blocking up of the blood may produce death by coma; but the ligature has entailed no such result. Indeed, in the twenty-nine cases in which the vein alone was tied, that of Dr. Wattmann alone presented any symptoms referable to some lesion of the brain.

The vein of the *right* side was tied *laterally*, and after the patient had revived from the effects of the introduction of air, there was hemiplegia of the *left* upper and lower extremities. "After twenty-four hours, pain was felt in the paralyzed limbs, which seemed to be a forerunner of spasmodic contractions. These lasted for three days, diminishing in strength daily, and after they had disappeared, the sensation and voluntary movements of both limbs were as perfect as formerly." It is useless to try to explain these disorders by the ligature, as the cavity of the vein was not obliterated, so that there was no impediment to the return of venous blood; but the paralysis and hyperæsthesia must be referred to some lesion of the brain itself. It is thus seen that neither apoplexy, nor softening of the brain, nor even functional disturbance can be ascribed to tying one vein.

The preceding remarks have been called forth as introductory to a statement made by Professor Langenbeck, at page 51 of his paper, to the effect that "when both artery and vein are tied, not only does gangrene not follow, but there is less disturbance to the capillary circulation than when the vein or artery alone is tied. In two cases of ligation of the common carotid and internal jugular vein, we have observed no phenomena indicative of obstruction to the cerebral circulation. The intellectual faculties were unimpaired, and there was no weakness or paralysis of the limbs."

The above statement is true of Professor Langenbeck's own cases; but from an examination of those contained in the third table it is obvious that a more extended record does not confirm his positive assertions. Of the twelve cases two are to be excluded: that of M. Labat, who dismisses it himself with the remark that the case recovered with some nervous and hemorrhagic accidents; and that reported by M. Giraud, as no result is given. Ten cases thus remain for investigation. Of these, six, namely, the two of Langenbeck, those of Mott, Pancoast, Gibson, and Guthrie, were unattended either by immediate or remote signs of functional or organic disturbance of the brain; whilst that of Dr. Watson terminated fatally from acute cerebral softening, as seen upon post-mortem inspection; that of Dr. Zeis, at a very remote period, from chronic disorder, and that of Dr. Barovero from chronic inflammation. In the case of Professor Warren, in which the vessels of the *right* side were tied, there was some functional disturbance, as shown by "great difficulty in moving the *left* arm and leg;" but the condition was not exactly that of paralysis. In the case of Dr. Zeis, the *left* vessels were tied. On the 65th day the infant was attacked with convulsions and *hemiplegia of the right side*. These symptoms continued with increasing debility until the 49th day after the attack of convulsions, when the child died; but no examination was allowed. Dr. Watson tied the *left* vessels in his case. In 48 hours there was somnolency bordering on coma, followed in four hours by *hemiplegia of the right side* and strabismus, in which condition the man died 57 hours after the operation. Dr. Barovero tied the vessels of the *left* side with one thread, and the operation was succeeded

by immediate signs of cerebral trouble, as giddiness, spectral delirium and palsy *of the left side* of the mouth and of the left hand. These phenomena continued for ten days. On the 60th day there were symptoms of gastric fever, which soon became pernicious, with loss of sensation, sopor, and death in nine days. The dissection showed evidences of chronic inflammation. *From these data it thus appears that signs of cerebral disturbance followed ligation of the common carotid artery and internal jugular vein in 40 per cent. of the cases, of which 75 per cent. proved fatal; death having ensued in one case from acute softening, in one from chronic softening, and in one from chronic inflammation. The statement of Professor Langenbeck, which was based upon a too limited experience, that "gangrene is not to be feared," must, therefore, be rejected.*

The question naturally arises, How are these phenomena to be accounted for? I am myself at a loss to explain them. It has been seen, on the one hand, that these symptoms are not produced when the vein alone is tied, and, on the other, that they frequently follow ligation of the artery. I am disposed to refer them solely to the sudden interruption of the arterial circulation; and I do not deny the statement of Professor Langenbeck that "an equilibrium is maintained between the arteries and veins until the collateral circulation has been established;" I only differ from him in regard to the occurrence of softening of the brain. Indeed, in the case of Dr. Heineken, the plugging may have obstructed the internal carotid artery, and thus have given rise to the fatal coma. Professor Langenbeck's deductions seem *a priori* to be reasonable; and it is very certain that gangrene does not always follow simultaneous ligation of the principal artery and vein of an extremity. I have collected many cases of this procedure, and, as I have stated in the preceding part of this essay, the operation was very common in the latter part of the last century, and was even practised by Mr. Hunter himself, without the production of mortification. That gangrene is not only not an inevitable result, but is rarely to be looked for, is well shown by the cases of Professor Grillo, of Naples, who included the femoral artery and vein in the same ligature in fifteen cases of aneurism of the ham or lower part of the thigh. These were all successful; while in fourteen other cases, in which the artery was isolated and alone tied, there were two deaths from secondary hemorrhage.[1]

It would appear that in two of the cases of Table III. both vessels were included in the same thread, a procedure which should not be imitated, as death might result from secondary hemorrhage. In such a case, the vein being interposed between the ligature and the artery, the thread would act mediately upon the coats of the latter vessel, and not produce the desired effects.

Remarks on the Ligature.—The merit of having first applied a thread

[1] Gazette Médicale de Paris, p. 539. 1834.

to the internal jugular vein is due to Dr. Simson, of Scotland, the procedure having been employed at least forty times since the publication of his case.

The *effects* of the thread, as seen upon the human subject, are mentioned in the cases of Mr. Guthrie and Dr. Langenbeck, which illustrate the healing process after the application of each form of ligature. In the case of the former a lateral ligature was used, and on the ninth day the internal jugular vein was found pervious, without any mark indicating where it had been applied. In that of the latter, in which the vessel was completely surrounded by the thread, the inspection on the twelfth day showed the "vein completely healed, without trace of clot, redness, or thickening of its walls."

The *date of separation* is noted in eleven cases, and refers to seventeen ligatures. The shortest time was four days, the longest twenty-three days; the average thirteen days. One thread was cut away on the eighth day; two were pulled away on the thirty-third day; and one was remaining at the same date.

Substance and Number.—As metallic ligatures are not mentioned, it is assumed that silk or flax was employed in all the cases. In regard to the number, it is found to have varied from one to three. Of the thirty-seven cases in which the mode of application is mentioned, seventeen were single, nineteen double, and one treble. Of the single threads, six were lateral; two were applied to the upper end, and four to the lower end; in two cases the same thread included the common carotid artery; and the site of the remainder is uncertain. Of the double ligatures only three were peculiar: in one instance there was intermediate division of the vessel, and in two cases the threads were applied above and below the orifice of a divided vein emptying into the internal jugular.

Secondary hemorrhage occurred in five cases, affording a percentage of 12.2, of which 80 per cent. were fatal from the use of the lateral ligature.

The *mortality* after ligation of the internal jugular vein, as based upon forty cases in which the result is known, is but 12.5 per cent.; or, if the fatal case of pyæmia be rejected as due to the ligature, the mortality is reduced to 10 per cent.

It is to be remarked that in the cases of Sédillot, Mott, O'Shaughnessy, Warren, and Langenbeck, portions of the vein were excised with morbid growths; in one instance to the extent of about three inches.

Bad Effects from Ligation.—The evil consequences which have been assumed as resulting from obstruction of the internal jugular are entirely unfounded. An inspection of the twenty-nine cases of Table No. II. shows that capillary venous congestion, serous effusion, gangrene, and apoplexy have not resulted in a single instance. In the case of Dr. Wattmann, in which a lateral ligature was applied, and which consequently did not interfere with the return of blood from the brain, there was hemiplegia of the opposite side for several days; a phenomenon which I have already

endeavoured to explain by some coexisting lesion of the brain. In only one instance of the entire forty-one cases, that of Langenbeck, Case 25, Table No. II., was there any œdema. This was slight, and was confined to the corresponding side of the face;[1] and I am, therefore, inclined to believe that those authors who fear œdematous swelling on the distal side of the ligature, have applied the experiments of Lower on the dog to the human subject. Nearly two hundred years ago, Lower tied both jugulars of a dog, an operation from which death resulted in forty-eight hours. The areolar tissue of the head and neck was enormously distended with serous effusion.[2] According to Morgagni,[3] the experiments of Galen, Emettus, L'Amur, and Novesius showed no disturbance of the cerebral functions after ligation of the internal and external jugular veins; and no mention whatever is made of œdema. It may, therefore, be concluded that when one jugular vein is obstructed by the ligature, the free collateral circulation always prevents cerebral disorders, and that the occurrence of œdema is the exception to the general rule.

General Results of all Cases of Injuries and Operations in which the Internal Jugular Vein was wounded.—One case is excluded from the last table, as its termination is unknown; so that there are 85 instances, with 37 deaths, or a mortality of 43.52 per cent. The causes of death were in the following proportions:—

	Cases.	Per cent. of all cases.	Per cent. of all deaths.
Secondary hemorrhage	10	11.76	27.02
Pyæmia	6	7.05	16.21
Primary hemorrhage	4	4.70	10.81
Introduction of air	4	4.70	10.81
Exhaustion	6	7.05	16.21
Cerebral disorders	6	7.05	16.21
Epilepsy	1	1.17	2.70

General Results of No Treatment.—20 cases; all fatal, or a mortality of 100 per cent.:—

	Cases.	Per cent.
Introduction of air	4	20
Primary hemorrhage	4	20
Pyæmia	5	25
Secondary hemorrhage	5	25
Epilepsy	1	5
Softening of the brain	1	5

General Results where Compression was employed.—16 cases; 2 deaths, or a mortality of 12.5 per cent.:—

	Cases.	Per cent.
Secondary hemorrhage	1	6.25
Apoplexy	1	6.25

[1] See Langenbeck's paper, p. 50.

[2] Tractatus de Corde, etc., p. 123 et seq. 1669.

[3] Cooke's Morgagni, vol. ii. p. 567 et seq. Boston, 1824.

General Results of Cases in which the Ligature was employed.—40 cases; 15 deaths, or a mortality of 37.5 per cent.:—

	Cases.	Per cent.
Exhaustion	6	15
Secondary hemorrhage	4	10
Chronic softening of brain	2	5
Acute softening of brain	1	2.5
Bronchitis	1	2.5
Pyæmia	1	2.5

In arriving at the preceding general results, it is distinctly to be borne in mind that the injury of the vein was in but few cases uncomplicated by other injuries. Of the 85 cases, the vessel was injured 37 times in the removal of tumours; 16 times by stabs; 12 times by gunshot injuries; 8 times by suicidal wounds; 3 times by accidental wounds; 7 times by other wounds, the nature of which is uncertain; and twice in ligating the common carotid artery. The true results of wounds of the internal jugular vein may, then, thus be stated, premising that the ligature was the cause of a fatal result in but four cases: Mortality of cases not subjected to treatment, or in which the treatment is not stated, 100 per cent.; mortality of cases subjected to compression, 12.5 per cent.; mortality of cases in which the deaths are referable to the ligature, 10 per cent.

General Conclusions.—From all the data contained in this paper, I have arrived at the following conclusions in regard to wounds of the internal jugular vein:—

First. That incised and punctured wounds of the internal jugular vein are to be classed among the most fatal of accidents; and, if subjected to no treatment, are invariably mortal from primary hemorrhage, the introduction of air, pyæmia, or secondary hemorrhage.

Secondly. That gunshot wounds of the vein alone are always fatal from primary or secondary hemorrhage, or pyæmia.

Thirdly. That when the carotid artery is opened at the same time, either as a result of gunshot, incised, or punctured wound, the case may, under favourable circumstances, recover, but with the formation of an arterio-venous aneurism.

Fourthly. That compression is followed by a fatal result as often as ligation; is more painful and inconvenient, and is to be resorted to in those cases only in which a thread is inapplicable from the high situation of the wound, or when the vein is merely punctured, and the measure can be applied mediately.

Fifthly. That ligation is more convenient, produces neither pain nor a suppurating cavity; and, that the fears of exciting diffused phlebitis are utterly groundless, as there is not a single example showing that such an inflammation has followed its employment. The ligature is, moreover,

called for to guard against the introduction of air and prevent its further ingress, as well as to prevent the occurrence of diffused phlebitis.

Sixthly. That the lateral ligature is to be avoided, as it has been the cause of all the fatal results from secondary hemorrhage; and that both ends of the wounded or divided vessel are to be tied, since reflux hemorrhage is not an infrequent occurrence.

Seventhly. That ligature of the common carotid artery will not restrain the flow of blood from a wounded internal jugular vein, and is, therefore, to be rejected as a hemostatic measure.

Eighthly. That not only has the danger of pyæmia after ligation of the vein been greatly exaggerated, but that all the dangers are also hypothetical, as neither apoplexy, softening of the brain, nor other cerebral disorders have ensued from its employment, the collateral circulation being amply sufficient to prevent those accidents.

Ninthly. That the cause of death after ligation is not to be looked for in the production of pyæmia, as the fatal issue has, in every instance, been due to secondary hemorrhage, coming on about the time of the separation of the thread.

APPENDIX.—The value of these general conclusions is enhanced, and their truth verified, by several additional cases that I have collected since this paper went to press. The first two demonstrate the safety and efficacy of the ligature: that of Mr. Fleming, which has generally been overlooked, is interesting from the fact of its being the first recorded example of ligation of the common carotid artery in its continuity, after rupture of the artery itself. Its similarity to the case of Mr. Guthrie, Case 4, Table III., is very striking. In both, the artery was grazed and the vein was tied; and hemorrhage from the ruptured artery occurred on the eighth or ninth day.

CASE I.—On the 9th of October, 1803, a servant on board His Majesty's ship Tonnant, attempted to commit suicide. On examination of the wound, which bled profusely, it was found that the crico-thyroid membrane, the superior thyroid arteries, and the internal jugular vein had been divided, and that the outer and middle coats of the common carotid artery had been grazed. All the vessels were tied except the carotid. The ligature from the vein came away on the seventh day, the patient having progressed favourably, with the exception of a troublesome cough and some swelling of the neck, which interfered with deglutition. On the ninth day after the infliction of the wound, during a violent paroxysm of coughing, the artery gave way, and deluged the patient with blood. Mr. Fleming, although he had no precedent for the procedure, at once cut down upon the vessel below the original wound, and included it in a thread; which was removed by dissection eight days subsequently. The man was discharged well at the expiration of two months. (*Med.-Chirurg. Review*, N. S., vol. vi., 1827, p. 167.)

CASE II.—Professor Greene, on the 19th of August, 1866, removed an enormous so-called bronchocele from a lady, forty-five years of age. The entire growth was covered with a network of fragile dilated veins, which poured out a fearful amount of blood on being divided. At one point the tumour adhered to the sheath of the carotid vessels; and while separating it, a gush of venous blood indicated the rupture of the internal jugular vein, which was tied at the com-

pletion of the operation. With the exception of some trouble in respiration and deglutition, the woman made an excellent recovery, the entire wound having cicatrized on the thirty-third day.[1]

The correctness of the first conclusion, that incised and punctured wounds of the internal jugular vein, when subjected to no treatment, or in which the mode of treatment is not given, and for which the ligature has not been employed, are invariably fatal from primary hemorrhage, the introduction of air, pyæmia, or secondary hemorrhage, is, with the exception of the occurrence of pyæmia, attested by the following additional cases.

CASE I.—"Wattmann gives the details of a case of a woman found dead in bed, with several incised wounds in the neck, by two of which the internal jugular vein was opened at two places. It was evident from the extent of the hemorrhage and other circumstances, that the wounds had been inflicted during life; and Wattmann endeavours to prove that it was not a case of suicide."[2]

CASE II.—Dr. Handyside reports a case of a gentleman who had cut his throat. The conjoined origin of the occipital and posterior auricular arteries, and the posterior facial vein on the left side had been divided, together with the internal and external jugular veins of the right side. A pound and a half of blood were lost. Air was found, on post-mortem inspection, in the internal jugular and thyroid veins, both venæ cavæ, and the veins of the liver, spleen, and kidneys. It was also contained in the left carotid, aorta, femoral, popliteal, and brachial arteries.[3]

CASE III.—Specimen 1521[45] in the Museum of Guy's Hospital shows the left internal jugular vein plugged with a coagulum. It was taken from a man, thirty years of age, who had attempted suicide, and in the act, the vein had been completely divided and the thyroid gland irregularly cut. Secondary hemorrhage caused the death of the patient on the sixth day after the injury.[4]

In addition to the nine cases of traumatic communication between the carotid artery and internal jugular vein, alluded to in the January number of this Journal, there is still another example of aneurismal varia, which is peculiar from the fact of the tumour disappearing on deep inspirations. These ten instances, therefore, comprise all that have been recorded of these varieties of aneurism. The name of the gentleman reporting the case is not mentioned.

A student, twenty-two years of age, was wounded in a duel on the 29th of March, 1832, the point of the rapier having entered the neck about one inch above the middle of the right clavicle, its direction being from above downward and towards the middle line. On removing the cravat, a tumour was seen to have sprung from beneath the sterno-cleido-mastoid muscle, and a few drops of blood issued from the small triangular wound. The swelling soon became as large as an infant's head; symptoms of suffocation supervened; the pupil was dilated; and the patient lost his consciousness. These symptoms were alleviated by the abstraction of twenty-four ounces of blood from the bend of the elbow, and cold compresses were applied over the tumour.

On the following morning there were marked pulsations, and a bruit, as if fluid was escaping from a small orifice. The cold applications were continued, and on the 17th of April the tumour was reduced to the volume of an egg. Eight

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[1] New York Medical Record, Dec. 1, 1866, p. 441.
[2] Cormack's Monthly Journal Med. Sci., Sept. 1844, pp. 782-3.
[3] Edinburgh Med. and Surg. Journal, vol. xlix. p. 209.
[4] Catalogue of the Museum of Guy's Hospital, vol. i. London, 1863.

months subsequently the tumour was of the same size. The bruit was confined to the point of communication between the two vessels, and the pulsations were so much increased by recumbency on the affected side that sleep was impossible. During a deep inspiration the tumour entirely disappeared; it could neither be seen nor felt, and it returned very slowly. The gentleman's general health was excellent. (*Archives Générales*, 2d ser., vol. iv. p. 135, 1834, and *Allgemeine Medicinische Zeitung*, No. xxxiv., 1833.)

PHILADELPHIA, January, 1867.

ART. II.—*On Rupture of the Abdominal and Pelvic Viscera, especially the Bladder, and other Injuries of the same Organs, including those occasioned by Fire-arms, with an Account of Eleven Cases, illustrated with Practical Comments and Observations.* By JOHN A. LIDELL, A. M., M. D., Brevet Lieut.-Col. U. S. Volunteers, late Surg. U. S. Vols., in charge of Stanton U. S. Army General Hospital, Inspector Med. and Hospital Department Army of the Potomac, etc. etc.

THE organs contained in the cavity of the abdomen are much more liable to be bruised and torn by external violence, unaccompanied with external wound, than those inclosed within the thorax and the cranium, since the walls of the former are composed almost entirely of the soft tissues, while the walls of the latter are strengthened and supported by either an osseous framework or a bony case.

The abdominal organs which are liable to suffer laceration from external violence, without external wound, are 1st, the *liver;* 2d, the *spleen;* 3d, the *stomach;* 4th, the *intestines;* 5th, the *kidneys;* 6th, the *ureters;* 7th, the *bladder;* and 8th, *ovarian tumours.* In such cases death may be produced either by shock, or by hemorrhage, or by peritonitis, or by deep-seated abscesses of the connective tissue. Rupture of the liver and the spleen, each, generally proves fatal from hemorrhage, or from shock and hemorrhage combined. Rupture of the stomach usually destroys life from shock alone, or from shock together with traumatic peritonitis. Rupture of the intestines kills its subjects from extravasation of feces into the cavity of the peritoneum, and diffuse inflammation of that membrane. Rupture of the kidneys, ureters, and bladder, may terminate fatally, either by extravasation of urine into the peritoneal sac, and the peritoneal inflammation consequent thereon, or by extravasation of that liquid into the connective tissue, and the consecutive abscesses which are liable to be produced by that cause. Rupture of ovarian tumours generally destroys life by inducing peritonitis.

1. Lacerations of the liver or spleen are usually accompanied by the effects of severe shock to the system, together with those of internal hemorrhage.

The symptoms are coldness and pallor of the lips, gums, face, and the whole surface of the body; pulse small, frequent, and feeble; countenance pinched and anxious; respiration sighing; restlessness; vital powers greatly depressed, with pain located in the part injured, and perhaps dulness on percussion, from extravasated blood; symptoms that speedily terminate in the death of the subject. But rupture of the liver does not prove fatal in all cases. It is only, however, in the cases where the injury sustained by that organ is comparatively slight, that we can hope for a favourable result. When the laceration is extensive, death is always speedily produced by the shock and the hemorrhage.

The following case affords an example of a form of *hepatic rupture* which is sometimes met with. In it the peritoneal investment of the liver was not torn through, although the hepatic tissue was very extensively lacerated. Death appears to have been occasioned by the conjoined operation of shock and internal hemorrhage. The blood was extravasated, not into the peritoneal cavity, or the abdominal cavity, as it is sometimes called, but beneath the peritoneal covering or coat of the liver, and between that membrane and the bruised, torn, and bleeding parenchyma of the organ.

CASE I. *Rupture of the liver in an adult occasioned by being run over by a beer-wagon; death thirty-six hours afterwards; autopsy.*—A large, muscular, middle-aged man, a German, who drove a beer-wagon in New York for a living, in reaching forward to pick up a rein while his horses were in motion, lost his balance, and fell before the wheels of his wagon, one of which passed over his abdomen. He died thirty-six hours afterwards. His wife informed me that he was a hard drinker up to the time of his death, indulging in deep potations of beer and brandy. I did not see him before death.

Autopsy about eight hours post-mortem.—Cadaver rather fat; face, lips, gums, and surface generally, very pale; right side ecchymosed. After opening the cavity of the abdomen, and elevating the sternum, a singular appearance was observed on the convex surface of the liver. The peritoneum covering it was seen to be extensively separated from the organ, and raised up by blood effused beneath it, so as to look like a large, flattened, bluish-coloured cake, laid upon the convex surface of the right hepatic lobe. The peritoneum investing the liver was not lacerated, and did not exhibit any marks of inflammatory action. On cutting open the large, flat, cake-like mass, it was found to consist of a quantity of fluid and coagulated blood, exceeding *forty ounces* in volume, which had been effused beneath the peritoneum, and had dissected or separated it from the hepatic tissue to the extent already mentioned. On removing the coagulum, we found an extensive laceration of the convex portion of the great right hepatic lobe; the length of the rupture was about six inches, and its depth three inches; its direction was parallel to the long axis of the liver, that is, perpendicular to the median plane of the trunk; its edges were separated from each other to a considerable distance by coagulated blood.

The liver itself was considerably enlarged, and exhibited the fatty degeneration. Its consistence was somewhat softer, or less firm than natural. There were no traces of either old or recent pleurisy, or peritonitis. The heart was large. The internal organs generally were anæmic.

Comments.—It is a singular fact that, notwithstanding the great extent of the laceration of the hepatic tissue in this case, the peritoneum covering it remained unbroken. Mr. Pollock, however, has also mentioned a case in which the liver was extensively ruptured by the passage of the wheel of a heavily laden cart across the trunk, and, at the same time, the peritoneum was not lacerated. This patient was admitted to St. George's Hospital May 26th, 1847, and died two hours afterwards. The peritoneum covering the upper surface of the liver appeared slightly bruised. On cutting into the upper part of the right lobe, considerable laceration of the substance was found, though the peritoneum was entire, and no hemorrhage into the peritoneal cavity had occurred. (Vide *Holmes's System of Surgery*, vol. ii. p. 416.) But this case differs from the one just related in one important respect, viz., the amount of the sub-peritoneal extravasation of blood appears to have been small in the former, and very large in the latter case, and, therefore, was much less efficient as a cause of death in the case related by Mr. Pollock, than in that reported above by the writer.

Although the laceration of the hepatic tissue, and the unbroken condition of the peritoneal coat which accompanied it, constitute the most interesting feature of our case, still I think the fatty degeneration of said tissue should not be passed by as unworthy of our notice in this connection. The intra-cellular and interstitial deposition of fat, by diminishing the consistence of the hepatic tissue, and rendering it more friable, may promote the occurrence of rupture, and predispose, in one sense of the word, the liver to suffer that injury, on the application of violence. That is to say, the liver, after it has undergone the fatty degeneration in a marked degree, may be ruptured by an amount of violence which, provided the organ is in a normal state, would not have produced such a result.

But the fatty metamorphosis of the liver that was present in this case also interests the surgeon in this connection, on account of its relations to the habits of the deceased; for, to what other cause besides beer and spirit-drinking can it be referred? It was not produced by phthisis pulmonalis, for the man did not have it. Neither was it occasioned by a luxurious table diet, for he was a poor cartman, who supported his little family by daily labour. Nor have we any evidence that it was produced by intercurrent disease in any form, for he usually enjoyed good health, until he was suddenly stricken down by violence. I therefore think we can safely assume that it was occasioned by his habit of drinking beer and spirits to excess. Furthermore, pathological research has shown that in almost all instances the livers of the intemperate have undergone the fatty metamorphosis to a greater or less extent.

With regard to the *treatment* of rupture of the liver, the surgeon must be guided by the symptoms, since no specific plan can be laid down for his direction. The indications are to limit the extravasation of blood from the lacerated organ, and to prevent or subdue inflammation of the hepatic

tissue and peritoneum. For the accomplishment of the first indication absolute rest, in the recumbent posture, must be insisted upon as a *sine quâ non*. *The patient must not even be permitted to raise himself, or to be raised in bed,* if his appearance and condition indicate that much blood has escaped from the injured organ. For, under such circumstances, though the patient may appear to be doing well, death may be produced by very slight exertion.[1] Opium should be administered, with a view to quiet the nervous system, to allay the local pain, and to moderate the inflammatory process, especially in the peritoneum. In cases where there is much pain and tenderness under pressure, it may be advisable to abstract blood with leeches, if the state of the pulse will allow depletion. Fomentations of the abdomen also not unfrequently afford the patient much relief from the pain and distress which are produced by rupture of the liver. But, as we have already stated, the treatment must, in the main, be guided by the symptoms, and be adapted to their relief.

Gunshot wounds of the liver bear considerable resemblance to the lacerated wounds of the organ of which we have just been speaking, for gunshot wounds in general are essentially lacerated as well as contused in character, and hence we may with propriety devote a few words to them in this place. But gunshot wounds involving the hepatic tissue are always complicated with traumatic lesion of other important structures, such as the peritoneum, walls of the abdomen, etc., whereby the severity of the injury is proportionally increased, and the chances of recovery proportionally diminished. We are not surprised, then, to find that gunshot wounds of the liver are attended with a very large mortality. Dr. Otis states, in Circular No. 6, dated War Department, Surgeon-General's Office, Nov. 1st, 1865, that of 32 cases of this form of injury, in which the diagnosis was unquestionable, all but 4 terminated fatully. (*Op. cit.*, p. 26.) The ratio of mortality thus afforded is 87.5 per cent. The same writer also says that gunshot wounds of the liver were usually followed by extravasation into the abdominal cavity, and rapidly fatal peritonitis. But the liver is one of the largest organs in the whole body, and hence is more liable to be injured by gunshot projectiles than such of the viscera as have a smaller size. Hence the liver is often wounded by the missiles of war; and thus it happens that while but a small proportion of those injured in this part recover, we still not unfrequently meet with successful cases. Thus, the writer has seen at least two patients having gunshot wounds of the liver that made good recoveries. Hennen has related two cases of recovery from gunshot wounds of the liver. (*Principles of Military Surgery*, pp. 340–343, Am. ed.) Guthrie has related five cases of the same

[1] A fatal result was expedited in this way, in a case of rupture of the liver, related by Mr. Pollock. This patient appeared to be gaining some strength, when he died suddenly, three days after the injury, on attempting to raise himself up to get upon the bed-pan. (Vide *Holmes's System of Surgery*, vol. ii. pp. 417, 418.)

form of injury which terminated in recovery. (*Commentaries on the Surgery of War*, pp. 529–532, Am. ed.)

The following case presents to us an example of gunshot wound of the liver.

CASE II. *Gunshot wound of the liver; convalescence already established when he passed out of view.*—Private Lyman T. Hunt, Company "G," 2d New York Cavalry, was wounded, according to his statement, and I know of no reason to doubt its correctness, in a cavalry skirmish connected with the pursuit of General Lee's army, April 6th, 1865, by a carbine ball (conical), which, as we found on examining him, passed through his right hypochondrium from before backwards, wounding the right lobe of the liver. He was left at a farm-house in the neighbourhood of the place where the wound was inflicted, until the 12th, when he was brought to Burke's R. R. Junction[1] in an ambulance, a distance of about fifteen miles, over roads that were rough and difficult of transit, from rut-holes and mud. My attention was not directed to him till the 15th. There was then a copious discharge from the posterior orifice of a yellowish-coloured liquid, which appeared to be bile. His general condition was by no means bad, and he was hopeful of recovery. His appetite was poor, but his abdomen was not swelled. There was no diffused tenderness nor pain in the belly. He said he had not suffered much pain at any time. He was thin in flesh and slightly jaundiced in colour.

On the 17th, the attendant being engaged in dressing the wounds at the time of my visit, I noticed that the anterior orifice was clean and granulating satisfactorily, and that the posterior orifice also was clean, except a small shred of slough which still hung in its centre. It also was granulating nicely. The orifice of exit was somewhat larger than that of entrance. He said his appetite was now somewhat better, and was also cheerful and hopeful.

April 19th. He was transferred to the Depot Field Hospital, at City Point, by railroad, doing well, thirteen days after the wound was inflicted.

Comments.—The result of this case is not known to the writer. Still, when we consider the length of time this patient was under observation after the injury was inflicted, and the fact that he was steadily improving, notwithstanding the disadvantages to him arising from rough ambulance transportation, etc., there seems to be but little doubt of his ultimate recovery.

The symptoms occasioned by gunshot wounds of the liver are those which belong to gunshot wounds in general, together with some that are produced by disturbance of the hepatic functions. Thus, Hennen says: "The usual symptoms which characterize these injuries are yellowness of the skin and urine, derangement of the stomach, and of the alimentary canal, and cutaneous affections, particularly great and distressing itching. The discharge from the wound is generally yellow and glutinous, but I have seen it of a serous nature, and sometimes very nearly allied to unmixed bile." (*Op. cit.*, pp. 339, 340.) In the case just related the patient

[1] Burke's R. R. Junction was then the base of the Army of the Potomac.

presented an icterode hue, the urine was dark coloured from the presence of bile, and the biliary secretion was distinctly seen flowing out of the posterior orifice of the gunshot wound. This biliary matter stained the charpie, compress, and bandage used in dressing the wound of a yellow colour.

Gunshot wounds of the liver tend to destroy life by the shock, the hemorrhage, and the consecutive peritonitis which they may occasion. One of Hennen's cases came nigh unto bleeding to death from the wound. The hemorrhage, which continued for three days from both orifices, was so excessive that the patient could not be moved from the neighbourhood of the field of battle. I do not doubt that gunshot wounds of the liver oftentimes occasion death by hemorrhage, or by shock and hemorrhage combined. Indeed, it is only in the less severe instances of this form of injury that we can expect recovery to take place. I believe that a considerable proportion of those wounded in the liver do not leave the field of battle alive. Such cases are apt to be returned under the head of those killed or mortally wounded in action on the company rolls. Gunshot wounds of the liver are much more likely to be followed by consecutive peritonitis of a troublesome character than simple laceration of that organ, since the same projectile which injures the liver injures the peritoneum, both parietal and visceral, to considerable extent also.

The treatment required by gunshot wounds of the liver is, in most respects, identical with that required by rupture of that organ; or, at least, it should always be conducted on the same general principles. Hennen and Guthrie placed their chief reliance on profuse bloodletting, repeated as often as necessary, purgation, and a low diet. Surgeons of the present day, however, consider the sanguinary method of treatment employed by our predecessors as highly improper. They believe that they obtain better results by abstaining from general bloodletting in most cases of wounds of the liver, and employing, instead thereof, opiates *p. r. n.*, local depletion with leeches or cups, epispastics, saline drinks, sufficient and bland or non-irritating alimentation, and quietude in the recumbent posture as nearly absolute as possible.

The clinical history of the following case affords a good illustration of the plan of treatment, which, in our experience, has proved to be satisfactory for the lesions of the hepatic tissue that are produced by fire-arms.

CASE III. *Gunshot wound of the liver; treatment—quietude, opiates, tonics, and a milk diet; recovery.*—Private Gilbert Smith, Co. "C," 126th N. Y. Vol., æt. eighteen, was admitted to the Stanton U. S. Army Gen. Hospital June 4th, 1864, for a gunshot wound of the abdomen, inflicted May 30th, in action at Hanover C. H., Va. The bullet penetrated the right hypochondrium about five inches from the median line, and at the inferior border of the thorax. It then passed downwards, backwards, and somewhat inwards, wounding the liver in its course, and escaped a little above the right ileum, about two inches from the middle line. When

admitted to hospital the patient complained of having much pain and soreness in the track of the wound, and in the neighbouring parts, and a thin viscid fluid, of a decidedly yellow colour, believed to be bile, was discharged in considerable quantity from the wound of entrance. Prescribed quietude in bed as nearly absolute as possible, water dressings for wound, anodynes to relieve distress, and a milk diet. He continued to be very restless, especially at night, and on the 6th he was ordered to take pil. opii (gr. j) every two hours until relieved; and after that the opiate was administered as often as necessary to procure relief from distress. No purgatives were given. The principal reliance was placed upon the opium treatment, assisted by quietude, cleanliness, and a diet consisting mainly of milk. His bowels did not move for about a fortnight, but this circumstance did not excite any apprehension in our minds, since he did not seem to suffer for the want of a motion. He became very much emaciated and debilitated, and it became necessary to administer besides opiates, stimulants (milk-punch) and tonics (tinct. ferri muriatic.). He obviously derived benefit from the use of these remedies.

July 8. He contracted scabies from a visitor, a comrade probably, which was treated successfully with ungt. sulphuris.

21*st*. He complained of having aching pains in his bones, which were most severe at night. Prescribed potass. iodid. gr. vj, tinct. cinchonæ f℥ij, to be taken four times a day. This remedy afforded complete relief in a few days.

August 4. He had a slight attack of diarrhœa, which was promptly arrested by the use of the subnitrate of bismuth. During all this period of two months the wound did well. The orifice of exit became completely healed in the latter part of July, and about two weeks before that of entrance.

10*th*. The orifice of entrance also is now completely healed, and all discharge from the wound ceased. After this he improved rapidly in flesh and strength, and soon began to leave his bed.

Sept. 7. Patient doing very well, and going about on crutches. Both orifices of the wound have closed with good cicatrices.

8*th*. He left the hospital on a furlough for sixty days.

In the opinion of the writer, it is not by any means certain that the result of this case would have been equally fortunate, if the patient had been treated by venesection, purgation, and a low diet.

It may, with propriety, be stated in this place, that the writer has seen another case of gunshot wound of the liver, besides the foregoing, make a good recovery under precisely the same mode of treatment; and, furthermore, that he has never seen a case of traumatic lesion of the liver treated by the sanguinary and depletory method which was employed by our predecessors, nor one which seemed to justify the adoption of such a plan of treatment.

With regard to wounds of the gall-bladder, Hennen says he has never known a patient to recover from that lesion; and he also remarks, that it is difficult to imagine how such an injury could be inflicted without an effusion of bile into the abdominal cavity, except an adhesion to the abdominal parietes had previously occurred. (*Op. cit.*, p. 344.) Guthrie

also says: "Wounds of the gall-bladder are, as far as known, fatal." (*Op. cit.*, p. 529.)

2. In the next case we are presented with an instance of laceration of both the tissue of the *spleen* and its capsular investment, which occurred without any external cause that was apparent; wherefore said lesion is supposed to have been produced spontaneously, or by the operation of internal causes.

CASE IV. *Spontaneous rupture of the spleen occurring in a patient affected with typhus fever; sudden death from internal hemorrhage; autopsy.*—Sarah Kerr, æt. about 25, born in Ireland, was admitted to the Emigrants' Hospital, on Ward's Island, Nov. 30, 1849, and appeared to be suffering from the ordinary symptoms of "ship fever," in an early stage. She said she had been sick only two or three days. On the next day after admission to hospital (Dec. 1st), she appeared to be doing well, until 1 o'clock P. M., when she suddenly became pale, faint, nearly pulseless, with blanched countenance, and all the usual symptoms of sudden internal hemorrhage, and in one hour she died.

Autopsy sixty-six hours after death.—Embonpoint preserved. Cadaver very pale and waxy, as in death from hemorrhage. Cavity of peritoneum contains a large quantity of extravasated blood (say 90 oz.), of which the coagulated portion is large (nearly 40 oz. in volume), and tolerably firm. This blood has been effused from the spleen, which, on examination, is found to be ruptured. Its peritoneal coat is torn through. There is also a clot of blood beneath the peritoneal investment of the spleen, 8 oz. in volume, which has compressed and flattened that organ. The parenchyma of the spleen is softened and of a bright chocolate colour. The peritoneum is nowhere inflamed. The blood is mostly collected in the left iliac and splenic portions of the peritoneal cavity.

The rupture of the spleen could not be attributed to any injury. Careful inquiry concerning this point was made at the time it occurred.

Comments.—To what circumstances must the rupture of the spleen which occurred in this case be ascribed? They appear to be several in number, the *first* of which is the considerable degree of softening, which all the structures that enter into the composition of the organ, including the coats of its bloodvessels, had undergone; *second*, the intense congestion of the portal vein and its radicles, which not unfrequently accompanies the early stages of petechial typhus as well as malarial fevers; *third*, the giving way of the softened walls of certain blooodvessels because of the distension occasioned by the stagnating blood, on the surface of the organ, whereby blood was extravasated between the splenic tissue on one side, and the capsule and investing peritoneum on the other; *fourth*, the extravasated blood increasing constantly in quantity compressed the parenchyma of the organ on one side and dilated or expanded the capsule and the investing peritoneum on the other, until finally they burst, and then the blood was poured in great quantity into the peritoneal sac, and all the symptoms of profuse internal hemorrhage were suddenly developed, and speedily followed by the death of the subject. It is also possible that the patient had sustained some slight injury involving the spleen which she had

either not noticed at all, or had entirely forgotten, and which determined the particular portion of the spleen where the hemorrhage began.

With regard to the special diseases, in connection with which spontaneous rupture of the spleen has been met with, the writer can only say, that while he recollects of having read of cases of malarial fever, wherein, during the algide stage, rupture of that organ occurred, he cannot now call to mind any instance of petechial typhus attended with such a lesion of the spleen besides the one just related.

Sir James Y. Simpson has, however, recently called attention to the subject of *spontaneous rupture of the spleen occurring in females, in connection with child-bearing.* At a meeting of the Obstetrical Society of Edinburgh, in June last, he referred to three fatal cases of that lesion, which occurred respectively in the pregnant, parturient, and puerperal states. The cause of death in each case was effusion of blood from the ruptured organ. In one instance, the accident happened in connection with premature labour, about the sixth or seventh month. The lacerated organ was found enlarged. In another instance it occurred in the person of a woman delivered with forceps at term. She sank and died of internal hemorrhage within an hour or two after delivery. In the third instance; the rupture of the spleen occurred a week or two after delivery. The patient, after making some unusual muscular exertion, complained of abdominal pain and sinking, and died. The lesion above mentioned and extravasation of blood were found on dissection. The predisposing cause of the laceration of the spleen in these cases appears to have been the hypertrophy and softening of that organ which are sometimes occasioned by pregnancy. (Vide *Edinburgh Med. Journal*, Sept. 1866, and *American Journal of Medical Sciences*, Jan. 1867, p. 266.)

Again, *rupture of the spleen* has not unfrequently been produced by external violence without previous disease of that organ. Hennen says that blows upon the region of the spleen have often given occasion to fatal extravasations of blood, and sometimes this organ has been ruptured by blows inflicted at more distant points. (*Op. cit.*, p. 347.) The same writer relates a very interesting case in which the spleen was ruptured by a violent blow upon the stomach. It occurred in the person of a soldier in the course of a fight with a comrade. This soldier had been knocked down, and while in the act of rising, with the assistance of another man, he received a powerful blow on the stomach, which brought him again to the ground. Upon being placed upon his feet, he fell, as if he had fainted. He was immediately assisted to his quarters, being unable to walk without assistance, where he died in a few minutes, with all the usual symptoms of internal hemorrhage. On making an autopsy between six and seven pounds of blood were found in the peritoneal cavity. The spleen was found to be ruptured from its lower to its upper margin, that is, to the extent of four inches. The laceration extended under the duplicature of the peritoneum connecting the spleen with the stomach, close by the entrance of the

splenic artery, the large vein accompanying which was ruptured. The spleen was not diseased. The abdominal viscera generally were sound. The stomach was filled with liquid food. The occurrence took place soon after breakfast. (*Op. cit.*, pp. 348, 349.) Guthrie says: "Injuries of the spleen have usually been fatal, from hemorrhage filling the general cavity of the abdomen, especially when they have arisen from rupture of that organ, which I have several times seen occur, in consequence of falls, or blows from cannon-shot, which have not opened into the cavity nor exposed the viscus." (*Op cit.*, p. 536.)

The fatality attending *gunshot wounds of the spleen* has been very great. It is stated in Circular No. 6 (p. 27), that all the cases of gunshot wounds of the spleen that have been reported during the late war were fatal. Hennen remarks: "Of wounds of the spleen I have seen a few; some of the slighter recovered, the deep invariably proved fatal." (*Op. cit.*, p. 347.) Guthrie, also speaking of the spleen, says: "Wounds from musket-balls have, for the most part, destroyed the sufferers either from hemorrhage or from inflammation. I have not seen nor heard, during the Peninsular war, of a wound in the abdomen, through which the spleen protruded, the patient recovering."

He further observes: "Wounds from stabs with a bayonet, or sabre, or long pointed sword are frequently fatal, either from hemorrhage or from inflammation; but I have seen, accidentally, after death, cicatrices in the spleen corresponding to external marks, indicative of a former wound." (*Op. cit*, pp. 536, 537.)

The treatment of wounds of the spleen should be conducted on the same general principles as the corresponding lesions of the liver, and the reader is respectfully referred to the portion of this essay where they are described for an account thereof.

3. *Rupture or perforation of the stomach* produced by external violence, without external wound, when its coats are not diseased, is a very rare occurrence, unless other organs are broken or lacerated at the same time, and almost invariably proves fatal. In all such cases the amount of shock sustained by the system at large is likely to be very great, and always to expedite, or even, in most instances, to directly produce the fatal issue. This circumstance grows out of the important office discharged by the stomach in the organic economy, and the intimate relationship it holds with the great nerve-centres and the vital organs (so called), though reflex nervous action. In an instance of this lesion of the stomach, which is reported in the *London Medical Review* for July, 1860, death occurred in about eight hours. The writer has never seen an example of this form of injury occurring by itself, that is, unaccompanied by rupture of other important viscera.

Gunshot wounds of the stomach are also very dangerous to life, but at the same time do not always prove fatal. Several instances in which wounds made in different parts of this viscus by puncturing, cutting and

contusing instruments, *and even by fire-arms*, did not prove fatal, have been collected by Hevin (*Mêmoires de l'Acad. Roy. de Chirurgie*, t. i. p. 590, including the foot-note marked *b*, *et seq.* Paris, 1761). But Ploucquet has collected a much larger number of examples belonging to the same category (*Literatura Medica Digesta*, etc., Art. Ventriculus and Pantophagus, 5 vols. 4to. Tubingæ, 1808—13.) Several cases in which recovery from this lesion took place, have been recorded by Hevin (*Mêmoires de l'Acad. Roy. de Chirurgie*, t. i. p. 444), and referred to by Ploucquet (*Literatura Medica Digesta*, etc., Art. Ventriculus and Pantophagus). Hennen mentions two cases of traumatic lesion of the stomach with a successful termination, which occurred at the battle of Waterloo, and were reported by Dr. Thomson. In one of them, the injury was inflicted by a musket-ball, and in the other by a pike. In our own country, the well-known case of Alexis St. Martin has been reported by Dr. Beaumont. Dr. De Witt C. Peters, U. S. Army, has also reported a case that occurred during the late war.

Private George H. Bowers, 8th Illinois Cavalry, was wounded in a skirmish near South Mountain, Sept. 13th, 1862, by a musket-ball, which entered two inches above the umbilicus, an inch to the left of the linea alba, and escaped beneath the tenth rib, three inches to the left of the spinous process of the tenth dorsal vertebra. Immediately after he was shot, he vomited blood copiously until syncope supervened. Hematemesis recurred frequently for seven days, and blood was passed at stool. Liquids taken into the stomach, and likewise the chyme, escaped freely through the anterior wound, and this phenomenon, in less degree, continued for a period of two months. Acute peritonitis followed the infliction of the injury. It was treated with quietude, epispastics, and opium in large doses. He became much emaciated, but after some time the wound healed, and then he recovered his flesh and strength. By the following May, the digestive organs had resumed their normal action; but the body was bent forward by intra-abdominal adhesions. He was subsequently discharged from the service. (Vide *American Med. Times*, April 4th, 1863, and *Circular* No. 6, *Surgeon-Gen. Office*, p. 25.)

Symptoms.—That a wound involves the stomach may sometimes be inferred from its situation and direction; but we cannot be sure that said viscus is penetrated by such wound, unless blood is vomited, or the contents of the stomach escape through the wound, or the solution in the continuity of the abdominal walls happens to be so extensive that the wound of the stomach can be seen by the surgeon.

Treatment.—Hennen says that Dr. Thomson's cases of wounds involving the stomach, which are mentioned above, were treated on the mild unirritating plan adopted for wounds of the intestines, and that, as he understands, both of them did well. The history of Dr. Peter's case gives us a good idea of the mode of treatment which should be employed for gunshot wounds of the stomach. Opium should be administered for the purpose of allaying pain and controlling peritoneal inflammation, and the patient's strength should be supported by such kinds of nutriment as

do not require gastric digestion, for example, strong beef-tea or other animal broths, sugar, emulsion of gum Arabic, well boiled porridge of farina, corn-starch, arrowroot, etc. In cases of incised wound of the stomach, it will be advisable to sew up said wound with the continuous suture, if the aperture in the abdominal walls is large enough to permit it to be done.

Dr. Peters has also related a case of punctured wound of the stomach, in the communication to the *American Med. Times* referred to above, which occurred in New Mexico. The injury was inflicted with a cheese-knife. The subject, a man, recovered in a short time, without surgical interference. This circumstance should teach us to avoid meddlesome interference, at least, in all similar cases.

4. The next case affords a good illustration of *rupture of the intestines* and its consequences.

CASE V. *Rupture of the ileum occasioned by the kick of a woman; death in twenty-two hours; autopsy.*—Thomas Clark, æt. about 50, and of intemperate habits, was taking improper liberties with a woman on the evening of August 16, whereupon she kicked him in the abdomen one or more times with her bare foot. After being kicked he immediately cried out with pain. Symptoms of peritonitis directly supervened, and he died August 17, about 7 o'clock P. M., twenty-two hours after the occurrence.

Autopsy twenty-four hours after death.—Cadaver in a decomposing condition. Scrotum emphysematous. Subcutaneous areolar tissue of neck also emphysematous. On opening the cavity of the peritoneum considerable gas escaped with a loud noise. This cavity contains a considerable quantity of bloody serum having flakes of lymph floating in it. The peritoneum is intensely inflamed through the greater part of its extent. It exhibits a dark-red colour, and extensive coating with recent plastic exudation. The stomach and intestines are distended with gas. The small intestines are agglutinated in places by recent adhesions. On continuing the examination, a rent or hole in the coats of the small intestine (*ileum*) was discovered in the left iliac region. This fissure was about three-quarters of an inch in length. Its long axis coincided with the long axis of the intestine. Its edges were not ragged, but sharp and well-defined. I did not discover any thickening of them nor any ulceration. In the neighbourhood of the rent the intestine was blackened by ecchymosis to the extent of several inches. The intestinal coats were also softened, but they were not very soft. There were no intestinal ulcerations. The mucous coat generally was reddened and softened. The omentum exhibited some chronic thickening in places which were smeared over with recent fibrinous exudation.

There was the sac of an old oblique inguinal hernia in the left groin. The gut was not down in the breach when I made the examination. I could introduce two of my fingers into the abdominal ring.

The rupture of the intestine gaped open and was therefore somewhat elliptical in shape. Through it the contents of the intestine had been poured into the peritoneal cavity. Through it the mucous coat protruded but did not suffice to plug it up. The inflammatory effusion in said cavity was very irritating. It caused much smarting pain in some slight abrasions upon my hands.

A physician was brought to the deceased soon after he was kicked, and

found him complaining of intense pain located principally in an old inguinal hernia of the left side. The gut was then down in the sac. He reduced the hernia, which afforded some relief from the pain. The hernial swelling was also tender. The patient continued to complain of severe abdominal pain, which was most intense in the left iliac region. The abdomen speedily became tender under pressure, constipation was present, vomiting supervened, with tympanitis and hiccough, he became collapsed, and he died twenty-two hours after the infliction of the injury.

The presumption is strong that he was kicked on the hernial tumour, the gut being in the sac at the time, and that the rupture of the intestine was produced in this way.

CASE VI. *Traumatic peritonitis produced by rupture of the small intestine (probably); death in twelve hours; autopsy.*—John McGlear, a young man æt. 17, ran against the tail of a cart that was standing in the street, and inflicted thereby a violent blow upon his abdomen, while hastening to reach a fire in the darkness, on the night of March 15. According to his statement, as I was informed, the cart struck his belly a little above and to the right of the umbilicus. I did not see him during life.

Autopsy twenty-nine hours after death.—Rigor-mortis strong. Abdomen tumid from gases in the cavity of the peritoneum. On opening said cavity they escaped with a loud noise. Large portions of the peritoneal coat of the intestines are injected with blood, red in colour, varying from scarlet to crimson, and present a velvety or very fine granular appearance. Other portions of both the visceral and parietal peritoneum are covered with a gray and soft coat of false membrane, and still other portions are invested with a thin layer of pus. The cavity of the peritoneum contains about half a gallon of yellowish frothy fluid, containing flakes of lymph and pus. The bladder is about half full of urine, and uninjured. The intestines are considerably and pretty uniformly distended with flatus. It is not easy to find the place of injury or rupture. There is no mark of bruise or ecchymosis in the walls of the belly; neither does it become apparent on superficial inspection of the intestines where the laceration has taken place. I passed the greater part of the intestines *in situ* through my fingers without finding the place of rupture. I was precluded from continuing the search by the circumstance that the coroner and his jury were impatiently waiting for my testimony at this time. I have little doubt, however, that some portion of the intestinal canal was ruptured, and that the diffuse peritonitis which killed the subject in twelve hours was produced thereby; and believe that I would have found the fissure if I had been permitted to continue the search for a sufficient length of time.

The *liver*, *spleen*, and *kidneys*, were normal.

Comments.—Rupture of the intestinal canal without external wound, but, at the same time, produced by external violence, is a form of injury that is often met with. It has been produced by falls upon the abdomen, by the kicks of horses or mules upon the same part of the body, by violent blows inflicted by other means, and by the application of a great amount of dead weight, as, for example, when the belly is run over by the wheel of a heavily laden cart or wagon. In the case last related the intestinal rupture was occasioned by striking the belly with great violence against the tail of a cart while running. In the case which precedes it, laceration

of the ileum was produced by the kick of a woman. I also recollect one instance in which this lesion of the small intestines was produced by being caught between the bumpers of two rail-road cars.

Symptoms.—Rupture of the intestinal canal from external violence, and without external wound, generally occasions the following phenomena: Abdominal pain, which is more intense at the seat of injury than elsewhere, and is much increased by pressure; respiration, superior thoracic and hurried; decubitus dorsal, and the legs are generally drawn up; tympanitis, with a tense, hard, and unyielding state of the abdominal muscles, not unlike that of a drum-head; pulse frequent, quick, small, and tending rapidly to become weak; countenance pinched and anxious; tongue usually coated (more or less); vomiting generally commences early and continues to the close; the matter thrown up consists at first of the remains of the last meal, next of a greenish-coloured liquid, and finally of a dark-coloured matter having a feculent odour. The bowels are obstinately constipated. The patient sinks rapidly into collapse, and generally dies after an interval which varies from eight or ten to thirty or forty hours in duration. Occasionally the patient survives the injury for three or four days. In some cases the shock occasioned by the injury is very great, and such patients commonly die early. In other cases the shock is but slight. In the former, the intestinal laceration is usually found to be extensive, on making an autopsy; in the latter it is commonly discovered to be but small. Thus we perceive that all the symptoms which are produced by rupture of the intestines, with the single exception of the primary shock, are occasioned either by the extravasation of the intestinal contents into the peritoneal sac, or by the diffuse inflammation of the peritoneum which immediately succeeds it.

On making a post-mortem examination of the injured intestine, the edges of the laceration are generally found to be everted, and the mucous membrane protruding, often plugging up the aperture when it is small. Sometimes it is difficult to find the place of rupture when it happens to be very minute and covered up by false membrane. Intestinal lacerations having a small size are, for the most part, the result of blows or kicks; and those having a large size, in some cases almost severing the wounded gut, are generally occasioned by the passage of heavy weights, such as the wheel of a loaded cart or wagon, over the subject's abdomen.

The *prognosis* in cases of intestinal rupture, with escape of feces into the peritoneal sac, is always very unfavourable. Indeed, so far as the writer is informed, there is no case on record of recovery from this lesion of the intestines, after extravasation of their contents into the peritoneal cavity has occurred. It seems, however, possible for recovery to take place in cases where such extravasation of feces does *not* occur, either in consequence of the minute size of the rent, or from its being plugged up by the protrusion of the mucous lining.

The *treatment* of this form of injury should be conducted rather with the view of procuring relief from suffering than with the expectation of saving life. Happily that which accomplishes the first-named indication best is also well adapted to secure the latter, if it should happen to be practicable. For the purpose of alleviating pain, opium should be administered with a view to get the narcotic effects of the drug. The quantity required varies with the idiosyncrasies and the special features of the case, some patients requiring more and others less in order to affect them. It is a good plan to give to such patients two grains of opium at the first dose, and afterwards one grain every hour until relief is obtained. Sometimes still larger doses must be administered before the pain abates.

But *gunshot wounds of the intestines* do not always prove fatal. Clinical observation has abundantly shown the correctness of this statement. The writer has seen several cases of recovery wherein the intestinal canal was either penetrated or perforated by gunshot projectiles. The diagnosis was undoubted, because a discharge of feculent matter from the external wound occurred in each of them. Abstracts of *seven* cases of fecal fistulæ produced by gunshot wounds of the abdomen are published in Circular No. 6. A case is also mentioned in the same report, in which a conoidal musket-ball entered at the tip of the ensiform cartilage and remained in the body, and fourteen hours afterwards the projectile was passed at stool. There was no general peritonitis, and the wound healed promptly. Another case is related in the same report, wherein a gunshot wound involving the upper part of the small intestines terminated in recovery. There was a fistulous channel communicating with the calibre of the gut, but the discharge was not feculent. Three ascarides lumbricoides escaped from the wound during the *second* and *third* weeks of the treatment. Another case is mentioned in said report, in which a gunshot wound of the stomach eventuated in recovery. It is also stated in Circular No. 6 that recoveries after gunshot wounds of the large intestines have been much more numerous than after wounds of the ileum and jejunum (p. 26). Prof. Hamilton has collected *eight* cases of fecal fistula produced by gunshot wounds of the intestines in the late war in this country, all of which terminated in recovery. (*Treatise on Military Surgery*, pp. 350–353. New York, 1865.) Numerous examples of recovery from this form of injury are also recorded in the writings of our predecessors. Gunshot wounds of the intestinal canal are less fatal than simple rupture of that tube, because, in the first place, the wound in the abdominal parietes prevents the gases which may escape from the injured intestine from becoming confined in the peritoneal cavity; and, in the second place, the commotion in the coats of the intestine, produced by the passage of the bullet, paralyzes the muscular coat for a time, and thus arrests the vermicular movement of the wounded part of the intestine, and prevents extravasation of feces into the abdominal cavity until adhesion has occurred at the place of injury between the

visceral and the parietal peritoneum, and then the fecal matter may be discharged externally.

The *treatment* of gunshot wounds of the intestines should be conducted with the following objects in view: 1st, to prevent the extravasation of feculent matter into the peritoneal cavity; 2d, to *control* the consecutive inflammation of the peritoneum; and 3d, in the later stages, to support the patient's strength by suitable alimentation. For the fulfilment of the first indication, it is necessary that the patient should be kept as quiet as possible and in the recumbent posture, and that opium or morphia in full doses should be administered; for that of the second indication, opiates should be administered in sufficient quantity to keep the patient free from pain, epispastics should be applied to the abdomen, and the wounds should be kept scrupulously clean. The administration of cathartics should be avoided, if possible. If febrile movement, with thirst, be present, saline drinks, such as liquor potass. citrat., or a solution of nitrate of soda, properly diluted, may be administered with advantage.

In many instances of gunshot wounds involving the intestines, observed during the late war, fecal fistulæ were produced. They commonly closed after a time, without operative interference, reopening at intervals, and then healing permanently. They therefore gave, in general, but little trouble in their management. (Vide *Circular* No. 6, S. G. O., 1865, p. 25.)

With regard to exploring the track of gunshot wounds of the intestines, the surgeon should always take care that, in case he makes such an exploration, he does not become obnoxious to the charge of meddlesome interference, and guilty of lessening his patient's chances of recovery by his own officiousness. He should never forget that, in the management of the cases belonging to this category, art, to be useful, must be the servant of nature, and must seek to do good by assisting her mistress in the efforts at repair which she inaugurates, following judiciously the method which she pursues, and not by the introduction of new and violent measures which are liable to aggravate the original injury. For these reasons the writer believes that the recommendations of M. Legouest in relation to the exploration with the finger, and the use of the intestinal suture in cases of gunshot wounds of the intestines, should, except in special cases, not be adopted, and that the old practice should, in general, be strictly adhered to.

5. *Rupture of the kidney* in consequence of external violence, and without external wound, is a traumatic lesion of not unfrequent occurrence. It may be produced by falling, as, for example, by being thrown from a horse, by powerful blows, and by the kicks of draught animals, whereby the kidney and the neighbouring parts are subjected to much violence.

The following symptoms are produced by laceration of the kidney: The injury is generally attended with the production of considerable shock;

there is also pain and tenderness under pressure in the region of the bruised and lacerated organ; the urine is always bloody, provided the injured organ has not been completely destroyed; death takes place either in consequence of consecutive peritonitis, the result of the extravasation of urine into the cavity of that membrane, or in consequence of extensive suppuration of the connective tissue, the result of infiltration with urine. But not all cases of laceration of the kidney prove fatal. Those in which the rupture is slight, generally recover, and there are many examples thereof on record.

The following case affords us an example of gunshot wound involving the kidney. I am indebted to Dr. George A. Mursick, late Asst. Surg. U. S. Vols., for the notes pertaining to it. The subject was attended by him as ward surgeon in the hospital of which the writer then had charge.

CASE VII. *Gunshot wound of abdomen, right kidney, and transverse process of third lumbar vertebra; death; autopsy.*—Sergt. James A. Bell, Co. I, 8th Illinois Cavalry, æt. 29, of good constitution, was admitted to the Stanton U. S. Army General Hospital, Sept. 25, 1863, with a gunshot wound of the abdomen. He stated that he received it in action on the 22d, near Madison C. H., Va. The bullet penetrated the right hypochondriac region, just below the margin of the ribs. The wound presented a ragged appearance at time of admission. The abdomen was tympanitic, and he complained of having pain in it. The bowels were constipated; pulse 130, and quick; respirations 26, and thoracic; expression of countenance normal. *His urine contained blood.* He was ordered to take pulv. opii, gr. j every three hours, and beef-tea *ad libitum;* and to have simple dressings applied to the wound.

Sept. 26. Condition about the same; increased opium to gr. ij every two hours; *urine continues bloody.*

27*th.* He appeared somewhat better; pulse 120; respirations 22.

29*th.* Bowels moved spontaneously; stool contained some blood.

30*th*, Morning. Pulse 116; respirations 20. 5 o'clock P. M. Abdominal pain and tympanitis increased; pulse 120; respirations 22; countenance expressive of great anxiety; again ordered pulv. opii, gr. ij every two hours.

Oct. 1. Patient much better this morning; pulse 116; respirations 18; pain and tympanitis much less; in afternoon he had a spontaneous evacuation of the bowels which contained some blood; at 5 o'clock P. M. the pulse was 110, respiration 14.

2*d.* Patient says he feels much better this morning, and is somewhat drowsy; pupils are not contracted; respirations 14.

3*d*, A. M. Pupils contracted to one-half of the natural size; pulse 110; respirations 11; tympanitis slight; he is very drowsy.

4*th*, A. M. Pulse 120; respirations 12; tympanitis increased; prescribed morphia sulph. gr. $\frac{1}{3}$ every two hours. P. M. Pulse 130 and feeble; respirations 14; tympanitis increased since morning; pupils no longer contracted; patient sinking; directed the morphia to be continued with sherry wine, f$\bar{3}$ss every two hours.

5*th.* Pulse 128, and feeble; respirations 18, and much embarrassed; ordered the morphia to be continued with sherry wine f$\bar{3}$j every two hours.

6*th*, A. M. Pulse 136, and scarcely perceptible; respirations 22; patient sinking fast. P. M. he died.

Autopsy eighteen hours after death.—Body rather emaciated; abdomen

protuberant; a large ragged-looking wound, about one inch in diameter, in the right hypochondriac region, just below the margin of the ribs. *Thorax.* The left lung and heart appeared to be normal in structure, but were pushed over somewhat towards the left side by a large collection of purulent matter in the right pleural cavity. The right lung was compressed and flattened, especially the middle and inferior lobes thereof, which readily sank in water. Both the pulmonary and costal pleura was covered with a yellowish-white layer of recent lymph. An abscess which had been formed in the connective tissue between the m. m. obliquus and transversalis abdominis, had burrowed upwards beneath the right crus of the diaphragm, and burst into the right pleural cavity. The liver appeared normal. The stomach and intestines were distended with gas. The great omentum and the mesentery were stained with extravasated blood black in colour.

Immediately behind the caput coli there was a large abscess which had burrowed along the psoas magnus and among the muscles of the back. It was lined throughout by a thick layer of false membrane, and in its lower part, immediately against the sacrum, a musket-ball, somewhat flattened, was found. In its course it had perforated the right kidney and likewise fractured the transverse process of the third lumbar vertebra.

The right kidney presented a ragged wound at its lower end. The surrounding connective tissue was much thickened, and lined with a layer of lymph which formed part of the wall of the abscess. The organ itself, on section, presented a pale pink hue and a granular appearance. Its parenchyma was also softened and flabby. The pyramids were almost completely effaced, except one at the upper end of the organ, which had a dark-brownish hue, and its tubes were distinct. Its pelvis had a greenish colour, and its veins were distended with blood.

Comments.—In this case the inflammation of the peritoneum appears to have been completely controlled by the opium, which was administered at the rate of two grains every second hour, and death resulted from the urinary abscess that was formed in connection with the injured kidney. If this abscess had been opened from the outside before it burst into the cavity of the right pleura by burrowing upwards, this patient's life might have been saved. This case, then, demonstrates that, in the treatment of rupture of the kidney, attention must be paid by the surgeon not only to the peritonitis which may be lighted up by that form of injury, but also to the inflammation of the connective tissue in the neighbourhood of the lacerated organ, which may be produced by extravasation of the urine. This case further shows that, in the treatment of abscess resulting from rupture of the kidney, it is a matter of the very highest importance to secure the *early* discharge of the contents of the abscess through an external opening, since, from the looseness of the cellular connections, the pus is apt to burrow widely in such cases, and may even burst into the cavity of the pleura, thereby exciting a fatal inflammation of that membrane. The indications to be followed in the treatment of rupture of the kidney are, therefore, twofold: 1st, to ward off and subdue consecutive peritonitis; and 2d, to protect the patient from the consequences of abscess formed in relation with the injured organ.

Wounds of the kidney appear to be less fatal than wounds of the spleen. It is stated in Circular No. 6, that several cases are reported in which it was believed that recovery took place after gunshot wounds of the kidneys. (*Vide* p. 27). Hennen relates a very interesting case of this form of injury in which recovery took place (*op. cit.*, p. 330 *et seq.*), and Guthrie refers to two additional cases which he supposes had a successful issue. But Hennen, and likewise Guthrie, remark that the cases on record of recovery from wounds of the kidney are not numerous. The first-named writer expressly declares that the instances of this lesion, wherein he has observed that recovery was established, are very few indeed. (*Op. cit.*, p. 329.)

6. *Rupture of the ureter.*—Mr. Stanley reported two cases of this lesion in the twenty-seventh volume of the *Medical and Chirurgical Transactions*. It is a form of injury that is not often met with. I have never seen an instance of it.

7. *Rupture of the bladder* is sometimes produced by external violence without the occurrence of any lesion of the abdominal walls, or any fracture of the bones of the pelvis. In order for the coats of the bladder to be torn through under such circumstances, it is necessary that the organ should be distended with urine, so as to mount up above the brim of the pelvis at the time when the injury is inflicted. Generally the urine, in such cases, escapes from the ruptured bladder into the peritoneal sac, and excites a fatal inflammation of that membrane. In more rare instances, however, the anterior wall of the organ only has been found to be lacerated, and the urine then is extravasated into the connective tissue of the pelvis. Rupture of the bladder almost always proves fatal. Out of *seventy-eight* cases reported but *five* recovered. In one of them the urine appears to have been extravasated into the peritoneal cavity, in three instances into the connective tissue of the pelvis, and in one case the rupture was only partial.

Dr. Stephen Smith's monograph on rupture of the bladder,[1] which was published in 1851, presents the most satisfactory account of that lesion which the writer has examined. It contains a tabular statement of *seventy-eight* cases, as stated above, of which the following is an analytical summary:—

Sex.—Males 67; females 11; making about 6 of the former to 1 of the latter.

Age.—Under 10, 3; 10 to 20, 3; 20 to 30, 19; 30 to 40, 26; 40 to 50, 7; 50 to 60, 4; over 60, none; adults 16, age not stated.

Condition.—Bladder distended in 30 (of this number 10 subjects were intoxicated, and 5 had urethral stricture); intoxicated, but condition of

[1] A Contribution to the Statistics of Rupture of the Urinary Bladder, with a table of seventy-eight cases. By Stephen Smith, M. D., Assist. Surg. to Bellevue Hospital, New York. New York, 1851.

bladder not stated, 14; in parturition, 4; in good health, 4; doubtful, 2; no note of 24.

Causes.—Direct violence, in 48; concussion, in 15; internal causes, in 9 (of which 4 were instances of parturition, 4 results of urethral stricture, and 1 of retroversio uteri); no note of 6.

Primary symptoms.—Severe in 59 (whereof 43 were ruptured into the peritoneal sac, 2 did not involve the peritoneum, 10 into the connective tissue, and 3 not given). Slight in 9 (of which 7 were into the peritoneal sac, and 2 into the connective tissue). No symptoms in 3 (2 ruptured into peritoneal sac, and 1 indefinite). No note of 7. Unable to urinate, 28 (of which 22 were ruptured into the peritoneal sac, 1 did not involve the peritoneum, and 5 into the connective tissue). Able to urinate, 3 (of which 2 were ruptured into the peritoneal sac, and 1 did not involve the peritoneum). Power of locomotion maintained in 7 (all burst through the peritoneum). Felt a sensation as of the bladder bursting, 7.

Progress of cases.—Symptoms continued severe in 48 (of which 39 were ruptured into the peritoneal sac, 7 into the connective tissue, and in 2 the peritoneum was not involved). The symptoms became severe in 10 (in 1 three hours after accident, in 6 two days, in 2 four days, in 1 three days—all ruptured into peritoneal sac except the last). In 1 ability to urinate continued (peritoneum ruptured). In 14 it returned (in 12 of them on the second day, in 1 on the third day, and in 1 on the fourth day). Locomotion continued in 2 (both ruptured into the peritoneum). Bloody urine drawn in 25; clear in 4. Symptoms were mild in 2 (both ruptured into the connective tissue).

Result.—Died, 73. Within 5 days, 44 (36 being ruptures into the peritoneum, 2 into the connective tissue, and 6 not stated). Between 5 and 10 days, 22 (17 into peritoneum, 3 into connective tissue, and 2 not involving peritoneum). Between 10 and 15 days, 2 (both into the connective tissue). Between 15 and 20 days, 3 (1 into the peritoneum, and 2 into the connective tissue). Above 20 days, 2 (both into the connective tissue). One of them lived 42 days. Recovered 5, as already stated.

Condition of bladder found post-mortem.—Ruptured into the peritoneal sac in 50 cases; in the anterior wall of the organ in 9, and at the neck in 6 instances. The bladder was firmly contracted in 17 cases. (Vide *op. cit.*, pp. 42, 43.) No apology seems necessary for presenting the foregoing summary, since it is likely to prove entirely new to most readers.

The following case is an example of *contusion of the bladder*, and is introduced in this place because of its intimate relationship with lacerated wounds of that organ.

CASE VIII. *Fracture of pelvis; very extensive contusion of the bladder; death on the third day; autopsy.*—John Rankin, a young man, æt. 22 or 23, was caught and very severely injured by the falling walls and timbers of a brick house, in process of erection, in Thirty-Second Street near Eighth Avenue, on the afternoon of March 27. The amount of the "shock" was very great, and reaction did not fully occur. He complained of having intense pain in the pelvis. He could not pass any urine, and it was drawn off with the catheter at proper intervals. He lingered till the morning of the 30th, when he died.

Autopsy thirty-one hours after death.—The body is in a good state of preservation. The *rigor mortis* is very strong. The *os pubis* is fractured

on each side at a point about three inches distant from the symphysis. On the right side the displacement of the fractured bones is considerable. The bladder presents a singular appearance. Externally it has a reddish-brown colour. It is nearly empty but not contracted. It contains a small quantity of urine having a natural appearance, but it is not contracted down upon said liquid. Its walls are very much thickened, being between half and three-fourths of an inch through from surface to surface. This great increase in thickness has been occasioned by sero-sanguineous infiltration of the tissues, constituting its walls. On section, the cut surface presents a reddish-brown colour. The mucous membrane lining the interior is blackened and reddened in patches and points, but it is not softened. The organ was not ruptured. There was no diffuse peritoneal inflammation. There was no lymph or pus on the peritoneal investment of the injured organ. There was, however, a little colourless or transparent serum in the peritoneal cavity. The intestines were distended with flatus.

In this case the muscular coat of the bladder was paralyzed by the injury it had sustained, and by the infiltration of its texture with sero-sanguineous fluid, or, in other words by the inflammatory process. It will be remembered that in this way the walls of the organ became very much thickened, and measured between one-half and three-fourths of an inch through from surface to surface.

But it not unfrequently happens in cases of fracture of the pelvic bones that the bladder is not only bruised, as it was in the case last related, but ruptured also. Of the 78 cases collected by Smith, rupture of the bladder was complicated with fracture or other severe injury of the bones of the pelvis in 15 instances (11 were ruptured into the connective tissue, 3 into the peritoneum, 1 not stated). The laceration of the walls of the bladder may be produced either *directly* by the same mechanical force as occasions the pelvic fracture, acting upon the organ while distended with urine, or *indirectly* by displacement of the broken bones, or osseous splinters and fragments of comminution may be driven into the organ from the place of fracture.

Again, rupture of the bladder sometimes occurs in connection with urethral stricture, and as a natural result thereof. Smith's table presents *four* examples of this variety of the lesion. In all of them the bladder appears to have been distended with urine when the accident happened. In two of them the laceration occurred while endeavouring to pass urine, in one while straining at stool, and in the remaining one it was occasioned by the passage of a coach wheel over the belly.

Furthermore, rupture of the bladder sometimes occurs in females during parturition. Smith's table contains *four* cases in which this accident was met with. Two of them were primiparous, and the second stage of labour appears to have been protracted and difficult. Concerning one of them it is stated that she was in good health, and that the labour was easy. In the remaining case the particulars of the labour are not given.

And, rupture of the bladder is occasionally induced in the female by

retroversion of the uterus. Smith mentions a case belonging to this category. The subject was pregnant. The uterus became retroverted, and the neck of the organ pressing against the urethra prevented the flow of the urine through that tube. She suffered retention *seven* days, when she felt something burst within her, and immediately experienced relief from the feelings of distension of the bladder and the desire to urinate. Death occurred on the second day, and nine or ten pints of urine were found in the cavity of the abdomen.

In most instances, however, the subjects of this lesion of the bladder have been intoxicated and engaged in pot-house brawls; the first circumstance predisposing them to a distended bladder, and the latter to unresisted, direct, external violence. (Smith, *op. cit.*, p. 5.)

Symptoms.—The symptoms produced by this accident are, from the outset, generally severe. Sometimes, however, they are but slight; and, in occasional instances, none are apparent till some time afterwards. When severe, they consist of intense pain in the hypogastric region, speedily followed by collapse and great desire to pass urine with repeated but ineffectual attempts to void it, a rapid and feeble pulse, and a pinched and anxious countenance. Urine withdrawn by catheterization at this stage is generally found to contain blood. In 29 cases of vesical rupture, the urine was bloody in 25, and clear in but 4. The patient sometimes dies at this period, apparently from shock. But if reaction takes place, the symptoms succeeding it will vary according to the part of the organ that is injured. For example, if the bladder bursts into the peritoneal sac, the symptoms of acute peritonitis rapidly supervene; but if it is ruptured into the connective tissue, the symptoms of urinary infiltration are produced. Occasionally, however, the symptoms at first are slight, even when the place of rupture is in the posterior wall of the fundus, not preventing sleep or even the usual occupation of the patient; but these are, sooner or later, followed by the most aggravated signs of acute peritonitis; the belly becomes tumid, tense, and very tender; the respiration thoracic, for the movements of the diaphragm almost entirely cease; the legs are drawn up towards the trunk; vomiting of bilious matter, with, perhaps, hiccough also, supervenes; the functions of the bladder continue more or less disturbed; and, finally, when dissolution approaches, all the most prominent symptoms subside, and the sufferer dies in possession of his reason. (*Op. cit.*, p. 8.)

The *diagnosis* of rupture of the bladder is generally not difficult to make. The parts subjected to injury, the nature of the violence, and the method of its infliction, the pain in the hypogastric region, the disturbance, arrest, and perversion of the functions of the bladder occasioned by the injury, the bloody appearance of the urine withdrawn by catheter, and oftentimes the patient's consciousness that his bladder has burst, when

taken together, almost always render the diagnosis tolerably certain and clear.

Prognosis.—Speaking of rupture of the bladder a recent English writer, Mr. Henry Thompson, says: "In any case a recovery has never been known to happen, and can scarcely be regarded as possible." (Vide *Holmes' System of Surgery*, vol. iv. p. 423. London, 1862.) This assertion, however, is not in accordance with the statements that have been placed on record concerning this accident by several different trustworthy observers, and certainly appears very remarkable when we reflect that Mr. John Birkett, in the second volume of the same system of surgery (p. 481), refers to three cases of rupture of the bladder which recovered; and in the foot-notes mentions, severally, the names of the surgeons whose patients they were, and likewise directs the reader to the original records concerning each of them. As already stated, Dr. Stephen Smith, in his table, presents five cases of this lesion in which recovery took place; and if we add to these one case mentioned by Birkett and not included by Smith (Mr. Porter's patient), we have a total of *six* recorded cases of rupture of the bladder that eventuated in recovery. So much for Mr. Thompson's erroneous statement. It must at the same time be admitted that the percentage of recovery from rupture of the bladder is very small.

Treatment.—Since this accident is not unfrequently met with, and, at the same time, is extremely fatal, its treatment becomes a subject of considerable interest to all who desire progress in the science and improvement in the art of surgery. We have already seen that rupture of the bladder may prove fatal in three different ways, viz: 1st, by the "shock" which accompanies the infliction of the injury; 2d, by consecutive peritonitis resulting from extravasation of urine into the peritoneal cavity, in cases where the bladder bursts in that direction; 3d, by sloughing of the cellular or connective tissue in cases where, from the situation of the rupture, the urine is extravasated into that tissue, instead of into the peritoneal sac, together with the exhausting suppuration which, in chronic cases, is likely to follow that form of the accident.

Now, it is obviously the duty of the surgeon, in treating rupture of the bladder, to endeavour to obviate the tendency to death occurring in the several ways mentioned above. He must, in the first place, take care that his patient does not die of "shock;" for which purpose he will prescribe such restoratives and stimulants as the amount of depression and other symptoms may demand. He must, in the second place, endeavour to save his patient from the consequences of extravasation of the urine, which have already been stated. Indeed, so far as the injury to the bladder itself is concerned, this accident does not appear to be specially dangerous to life. This viscus is not an organ of secretion, nor of nutrition, nor of any of the vital operations. It is mainly an organ of convenience, a reservoir or bag for the reception and retention of the urine temporarily, or until such time

as it can be expelled from the body without detriment thereto, and without interfering with the comfort of the animal. The destructive consequences of the accident under consideration result mainly from the inflammation that is kindled in the tissues with which the extravasated urine comes in contact external to the organ itself.

It therefore becomes a matter of the highest importance in the treatment of rupture of the bladder to secure promptly a free outlet or discharge of the urine upon the exterior of the body, for in no other way can a *continuance* of the extravasation of that liquid into the peritoneal cavity or into the connective tissue, as the case may be, with all its distressing consequences, *be certainly avoided.* It will be of little use to attempt to treat peritonitis occasionally by urinary extravasation until the extravasation itself, the outflow of urine from the bladder into the peritoneal bag through the rent, is discontinued; for we cannot hope to cure any disease while the cause, especially if it be mechanical or chemical in its nature, continues to multiply itself in active operation.

The free discharge of the urine from the bladder externally, must therefore be deemed as an indispensable condition, as a *sine qua non*, in the treatment of this lesion; and, since the urine flows continuously into the bladder through the ureters, its equally continuous outflow or discharge from the bladder should, therefore, be secured by the surgeon's art.

Now, there are several methods or surgical procedures by which this result can be more or less completely attained, and we will next proceed to consider them and their respective merits. They are: 1st. The employment of a catheter. 2d. Puncture of the bladder above the os pubis. 3d. Puncture of the bladder through the rectum; and, 4th. Cystotomy performed by cutting through the perineum as in the operation for stone. The last method appears to possess decided advantages over all the others, at least so far as the male subject is concerned. With regard to the first method, or catheterization, it should be borne in mind that the discharge of the urine through the instrument, as the patient lays on his back in bed, takes place against the action of gravity, since the orifice of the catheter is on a higher level than the bladder, and, consequently, the urine must be forced through the instrument, either by the contraction of the muscular coat of the organ, or by compressing it with the surgeon's hand, aided by the voluntary contraction of the abdominal muscles; and it should not be forgotten that the same effort which forces the urine through the catheter may, at the same time, force it through the rent in the bladder, thus increasing the quantity of extravasated urine, and diminishing the chances of recovery in a corresponding degree. This alone constitutes a serious objection against trusting to catheterization alone to secure a satisfactory emptying of the bladder in treating rupture of that organ. There is, however, still another difficulty which possesses considerable weight, viz., in many, perhaps in a majority of cases, the urethra will

not tolerate the long-continued presence of the instrument in the bladder, and without such presence, an injurious accumulation of the urine cannot, with certainty, be prevented, even in the most favourable cases. With regard to the second method, or puncturing the bladder above the os pubis, the surgeon will not be likely to employ this procedure for the purpose of keeping the bladder clear of urine in cases of rupture thereof, since it is much less likely to accomplish that result than catheterization. It may, however, be sometimes employed as a temporary expedient when the catheter cannot be introduced, and immediate relief from over-distension is necessary; but the bladder speedily contracts in cases of rupture, and the canula (above the pubes) cannot therefore be allowed to remain. Puncturing the bladder through the rectum also may sometimes be advantageously performed for the temporary relief of over-distension in cases of rupture of that organ; but as the contents of the rectum move downwards to escape in the act of defecation, they will not allow the canula to remain *in situ*. Puncturing the bladder, either above the pubes or through the rectum, should be considered only as temporary expedients which may sometimes be employed. Cystotomy, however, performed by the lateral method as for stone, fulfils all the conditions required to keep the bladder empty; it allows the urine to escape without effort on the part of the patient, and, as it were, spontaneously, almost as soon as it is received into the organ from the ureters. It is not open to any of the objections which pertain to the employment of the catheter in the treatment of rupture of the bladder, and, at the same time, is not *per se* a very dangerous operation. This procedure has been successfully employed by an American surgeon, Dr. Walker, of Boston, in a case of rupture of the bladder complicated with fracture of the pelvis, occasioned by rail cars, and the patient made a rapid recovery, although his condition appeared to be nearly hopeless at the outset. (Vide *Med. Comm. Massachusetts Med. Society*, Vol. VII., Art. IV., Case 6, 1845.)

The surgical treatment (operative) required in cases of rupture of the bladder embraces something more than what is necessary for the relief of retention of urine; for, when the organ is ruptured, the urine, even when not abundant, has a tendency to escape, not only through a natural channel, the urethra, but through an accidental passage, the fissure (and to the great detriment of the patient), whereas, in cases of retention, the urine has an outlet through the urethra alone (unless the bladder burst from over-distension). While, therefore, in the treatment of retention, it is only necessary for the surgeon to draw off the urine at suitable intervals, it is his duty in treating rupture of the bladder to provide also that the urine shall not continue to escape through the rent into the cavity of the peritoneum or into the connective tissue. This point seems to me of great practical importance, and one which has not been sufficiently regarded.

When the urine has been extravasated into the cavity of the peritoneum,

should paracentesis be performed for its removal? If it is deemed advisable to employ this operation, the pelvic cul-de-sac, into which the extravasated urine settles, should be punctured through the rectum, as recommended by Dr. Harrison. This procedure will be more likely to prove useful in cases where the amount of the urinary extravasation is large.

We have already said that rupture of the bladder is a very fatal lesion, and that in *seventy-eight* cases but *five* recovered. *Gunshot wounds* of said organ, however, appear to be much less destructive to life, although at first sight one would be likely to suppose just the reverse to obtain. The writer has seen two cases of gunshot wounds of the bladder make good recoveries, wherein the projectile passed completely through that viscus. They were treated with opium or morphia administered for the purpose of controlling the peritoneal inflammation, with catheterization at regular intervals performed with a view to prevent distension of the organ from urine, and with suitable alimentation to maintain the patient's strength. In all cases of laceration of the bladder great care should be taken in the introduction of the catheter, lest by pushing its point too far it may be passed through the rent into the peritoneal cavity.

The next case is an instance of gunshot wound involving the bladder which eventuated in recovery. A super-pubic, urinary fistula was formed which lasted about five months before it was completely closed. This patient also had gonorrhœa at the time when the wound was inflicted, and the treatment of the traumatic lesion was necessarily complicated with that required for this disease.

CASE IX. *Gunshot wound of abdomen and pelvis; bullet passed through bladder; recovery.*—Sergt. I. H. Post, Co. H, 61st N. Y. Vols., was admitted to the Stanton U. S. Army General Hospital, May 18, 1864, for a gunshot injury. He stated that his wound was inflicted in action at Spottsylvania C. H., May 12, by a musket-ball, that he had just fired his own gun when he got hit, and that the fight occurred in a wood. On examination it was found that the bullet entered two and a half inches to the *left* of the median line, and one and a half inch above Poupart's ligament; that it passed downwards, backwards, and to the right side through the bladder, and that it finally escaped from the *right* nates. The projectile also grazed the os pubis. Urine flowed out through the wound of entrance, but none escaped from the wound of exit. His general condition was rather feeble, and he complained of having a good deal of pain in the lower part of his bowels. He also had gonorrhœa. Prescribed pil. opii, gr. j every three hours, or as often as may be necessary to keep him and his bowels quiet and free from pain, rest in the recumbent posture, catheterization thrice daily, simple dressings for wound, and a milk diet.

May 19. Same treatment continued, with the addition of mistura copaibæ for the gonorrhœa. He voids considerable urine by the natural passage.

June 21. Prescribed egg-nogg three times a day, and a nourishing diet; opium, etc., to be continued. Under this treatment the case progressed satisfactorily, and about the middle of July the urine ceased to escape through the track of the wound.

July 24. He was attacked with diarrhœa, which was controlled with pil. camphor et opii. Afterwards some urine began to flow again from the orifice of entrance of the bullet.

Sept. 7. A little urine continues to escape from the wound of entrance, but the fistulous passage is steadily contracting. He is now in good flesh and spirits. His general condition is excellent in every respect.

18*th*. He has some pain and soreness in the posterior part of the track of the bullet, which is being relieved by a discharge of purulent matter *per rectum*. In every other respect he is doing well.

23*d*. The discharge of pus has ceased. The pain and soreness also have disappeared.

Oct. 9*th*. He continues to do well, and his wound is nearly healed. The orifice of entrance has been kept open by exfoliation of small pieces of necrosed bone from the os pubis.

Comments.—Dr. Otis remarks, in Circular No. 6 (p. 27), that gunshot wounds of the bladder, when the projectile entered above the pubes, or through the pelvic bones, have always proved fatal during the late war, so far as the records have been examined. There are, however, many examples of recovery from injuries of the parts of the bladder which are not covered by the peritoneum. The case just related appears to form an exceptional instance, since the patient recovered from a *supra-pubic* gunshot wound, involving the bladder. Guthrie has related[1] six cases of gunshot wounds of the bladder, in all of which recovery took place. In three of them the bullet entered above the os pubis, and in one instance over Poupart's ligament. In several of those cases reported by Guthrie it seems pretty certain that extravasation of urine into the peritoneal cavity occurred, but this liquid was not confined therein, for it immediately flowed out externally through the track of the gunshot wound. Thus, we have shown to us the reason why gunshot wounds of the bladder are much less fatal than simple ruptures of that organ; for, in cases of the first-named lesion the urine which is extravasated into the peritoneal cavity, or into the loose connective tissue of the pelvis, may escape externally through the wound made by the projectile, but in cases of the last-named lesion the urine is, as it were, imprisoned within the tissue or cavity into which it happens to be extravasated, and, remaining there, it kindles a destructive inflammation.

The following case presents us with an example of gunshot wound of the bladder, and is chiefly remarkable for the length of time that the patient survived extensive injury, not only of the bladder, but also of the peritoneum, and the bones of the pelvis:—

CASE X. *Gunshot wound of pelvis involving bladder; the bullet passed through the hips from side to side; urine flowed from the orifice of entrance; death on the* 21*st day from peritonitis.*—Private Wm. Hesling, Co. I, 9th U. S. Cav., æt. 19, was admitted to the Stanton U. S. Army

[1] Commentaries on the Surgery of the War in Portugal, Spain, France, and the Netherlands, &c. By G. J. Guthrie. Sixth edition. Phila. 1862.

General Hospital (Ward 4, care of Dr. C. R. Nelden, A. A. Surg. U. S. A., to whom I am indebted for the notes of the case), June 4th, 1864, for a very severe wound of the pelvis inflicted by a musket cylindro-conoidal bullet, five days previously (May 30th), in battle at Salem Church, Va. The projectile entered the right hip about two inches behind the trochanter major, and, having passed through the pelvis in a transverse direction, made its exit from the left hip about two inches behind the great trochanter of that side. It passed through the bladder from side to side. At time of admission to hospital, the wound looked well, but his general condition was not favourable, as he had considerable pain in the pelvic region, and was much debilitated. The urine escaped in large quantity from the orifice of entrance. Some urine, however, was passed spontaneously through the urethra. Prescribed the water dressing for the wounds, catheterization four times daily, pil. opii, gr. j every three hours, and a nourishing diet, with milk-punch.

June 8. Hemorrhage occurred from the orifice of entrance in the right hip. It was arrested by the use of liquor ferri persulph.; other treatment continued.

11*th*. Urine still flows from the wound in the right hip. Patient complains of having more pain. Ordered pil. opii, gr. j every two hours, and spiritus frumenti, f℥v daily.

15*th*. Patient again has some hemorrhage from wound in right hip. He has more pain still and is failing in strength. Prescribed pil. opii, gr. j every hour, and other treatment continued. But he continued to grow worse, and died June 20th. Hemorrhage occurred from both the orifice of entrance and the urethra on the day of his death.

The *autopsy* showed that the bullet passed through the bladder from side to side, *i. e.*, transversely, and that the intestines and other abdominal viscera were agglutinated by grayish-white or ash-coloured, soft, plastic exudation, the product of recent diffuse peritoneal inflammation.

Death in this case appears to have been produced by exhaustion—exhaustion that was occasioned by the diffuse peritonitis on the one hand, and by the extensive injury of the soft parts and of the bones of the pelvis inflicted by the projectile on the other. And when we reflect that, in this case, the urine flowed freely from the bladder through the holes in its walls into the peritoneal cavity, it seems remarkable that the patient survived his injury for so long a period as three weeks. This result must, without doubt, be attributed, to considerable extent, to the fact that the urine escaped readily from the cavity of the peritoneum through the wound of entrance, and thus that membrane was shielded from the destructive effects which would have been produced upon it by contact with the urine when in a decomposing condition.

In one of Guthrie's cases the ball remained in the bladder, and became the nucleus of a calculus, which was removed by the operation of cystotomy, and the patient recovered. Guthrie also alludes (*op. cit*.) to a case like his own that occurred in the service of the East India Company. The wound was inflicted at the battle of Chillianwallah. The projectile, together with the calculus which had formed round it, were extracted by operation, with a good result. Furthermore, Guthrie quotes from Baron Percy another case

belonging to the same category. That surgeon removed from the bladder of a young man, wounded by a pistol-ball, the projectile itself, a fragment of shirt, and some coagulated blood, before calculous concretions had had time to form around them. (*Op. cit.*, pp. 553, 554.) Hennen informs us that an operation similar to Guthrie's was performed at St. George's Hospital, on a soldier who was shot at the siege of Lisle, and operated on in the following spring; a view of the calculus is given by Cheselden, in his work on the *High Operation*, London, 1723, Plate X. Garengeot relates the case of an officer who was operated on for a stone, the nucleus of which was a musket-ball, that had entered the bladder ten years previously. (*Traité des Operations de Chirurgie*, tom. i. p. 17, Paris, 1730.) Hildanus gives an instance where a ball remained in the bladder for thirty years. (*Cant.* 3, *Obs.* 67.) Ballingall has collected nineteen examples belonging to the same category as the foregoing.

In cases of gunshot wounds of the bladder pieces of clothing and fragments of bone are not unfrequently carried forward by the projectile, and left in the cavity of that viscus. Now, such of these foreign bodies as are sufficiently small in size, may be discharged in the urine through the urethra, but the other and larger fragments are certain to do mischief, through the irritation which they must occasion, and if they are not extracted in a timely manner by surgical art, they will become incrusted with urinary deposits, and thus constitute the nuclei of stone. Many cases belonging to this category have been observed. The presence of these foreign bodies in the bladder can generally be detected without much difficulty by the aid of sounds.

The chief points which demand attention in *the treatment of gunshot wounds of the bladder* are, 1st, *to prevent urinary extravasation into the neighbouring parts;* 2d, *to subdue inflammation,* and, 3d, *to remove foreign bodies, especially those which may chance to be lodged in the cavity of the organ.* The *first* indication is generally attempted to be accomplished, in military practice, by the introduction of a flexible catheter into the bladder, and allowing it to remain there, or, in cases which do not tolerate the constant presence of the instrument, from morbid irritability of either the urethra or the bladder, by catheterization performed several times a day, whereby any undesirable accumulation of urine may be rendered impossible; but, in the writer's opinion, cystotomy performed by the lateral method would prove useful in many cases. The *second* indication may be fulfilled by quietude, by cleanliness, by suitable alimentation, by the administration of opiates and saline drinks, p. r. n., by the judicious employment of epispastics and local depletion, and by the early and thorough evacuation of the contents of any urinary abscesses which may be formed. The *third* indication will generally require for its accomplishment the operation of cystotomy. The selection of the particular operative procedure, however, depends much upon the size, shape, and nature of the foreign body,

the situation and direction of the gunshot wound, etc. For example, the discharge of pistol-balls and pieces of clothing from the bladder might be effected in most instances by dilating the urethra to sufficient extent, by the introduction of sounds adapted to the purpose, as if the urethra were being prepared for the performance of Civiale's operation of lithotrity, and by the employment of long, narrow-bladed forceps, after the urethra is sufficiently dilated. But foreign bodies which are too large for extraction in this way, will generally require the performance of an operation analogous in every respect to that of lithotomy.

CASE XI. *Rupture of an ovarian tumour from violence; diffuse peritonitis; death in about* 48 *hours; autopsy.*—A married woman named Fanny Powal, æt. about 35, and of intemperate habits, was severely beaten by her husband on Sunday morning, July 11, and died on the following Tuesday morning. They resided at No. 105 Washington Street. I did not learn what the symptoms were that followed the injury.

Autopsy, Tuesday, July 13, 1½ *o'clock P. M.*—Cadaver pale and thin; small bruise on right arm, and another on right side of neck. While dissecting off scalp, found a small bruise on cranium near vertex, and another on forehead, both near median line. Skull very thick. Cerebrum natural. Cerebellum rather softer than natural. Lungs natural. Heart rather fatty. Both auricles and the right ventricle contain clots. Mitral valve thickened, and exhibits some vegetations (so called) at margin.

Abdomen much swelled. Its cavity contains more than one gallon of sero-sanguineous fluid. The peritoneal coat of the small intestines exhibits an abundant quantity of recent plastic exudation, dirty white in colour, smeared over its surface. The peritoneal investment of the liver presents a similar appearance. The liver itself is much enlarged, fatty, and softened. There is an *ovarian tumour* of the left side, as large as the head of a new-born infant, which is divided into several compartments, or consists of several large cysts. Said tumour has recently been ruptured, in a vertical direction, at its antero-upper part. The fissure is more than two inches long. Here the walls of the cyst are thin. The contents thereof had escaped into the cavity of the abdomen, and produced diffuse peritonitis. The other cysts were not ruptured. One of them contained a semi-liquid substance which looked like purulent matter. The uterus was normal. The stomach and kidneys were not examined.

Comments.—This case, according to the writer's information, is unique. A woman afflicted with polycystic disease of the left ovary was badly beaten by her husband. The ovarian tumour had not yet attained a large or even a troublesome size, but, the walls of the uppermost cyst being thin, the violence sufficed to lacerate it extensively. The contents of this cyst were extravasated into the cavity of the peritoneum, and thus a diffuse inflammation of that membrane was excited, which rapidly proceeded to a fatal termination. It is probable that the intemperate habits of the subject also exerted considerable influence in increasing the intensity and promoting the diffuseness of the peritoneal inflammation. But rupture of ovarian tumours having a large size, more especially those which are cystic in structure, with thin walls, is an accident that is likely to occur not unfre-

quently on the application of violence to the exterior of the abdomen. It may be produced by falls, blows, kicks, etc., upon the belly, and, in general, the thinner the walls of the tumour are, other things being equal, the more readily is the rupture effected. Now, the results which may be occasioned by rupture of an ovarian tumour occurring in this way are threefold: 1st, diffuse peritonitis may be excited, and rapidly prove fatal, as happened in the case which has just been related; 2d, circumscribed peritonitis may be kindled, and occasion the death of the subject at a later period; and 3d, in cases where the ovarian tumour has contracted adhesions to the intestinal canal, and the rent occurs in that direction, the discharge of the contents of the tumour into the intestinal canal may be followed by destructive inflammation commencing within the tumour itself. In some rare instances, however, the inflammatory irritation excited by the rupture, etc., is of such a grade as to arrest the growth of the tumour, and ultimately cause its absorption. Such cases are called instances of the accidental or spontaneous cure of ovarian disease. The writer has here called attention to rupture of ovarian tumours because it is obviously the duty of every surgeon to make himself familiar with the subject.

332 Sixth Avenue, New York, January 31, 1867.

Art. III.—*On the Internal Use of Chloroform in Intermittent Fever.*

By E. McClellan, M. D., Asst. Surgeon U. S. Army.

When our paper was published in the number of this Journal for July, 1866, the majority of the cases in which chloroform had been exhibited were but recently under observation. Although the power of chloroform in arresting the *cold stage* had been determined, sufficient time had not elapsed to demonstrate any power which the remedy might possess over that morbid action which culminates in the paroxysm, or to show whether injurious results were likely to follow its continued employment, either through direct action, or by accumulation in the system.

The disease, in the great number of cases under observation, being in its primary form, yielded readily to the influence of quinia; and in such cases the chloroform was of undoubted value in relieving the patient of the physical prostration which would otherwise have succeeded the paroxysm; but a large number of the cases became, indeed, "*Fièvres intermittentes rebelles.*" The cold stage yielded to the use of chloroform, the hot and sweating stages were modified by its action, and the disease disappeared on the exhibition of quinia or arsenic, only to return after short intervals of repose.

It was suggested by my friend Dr. Edward Hartshorne, of Philadelphia,

to test the efficacy of iodine in these cases, the use of which, in the form of a tincture, had been recommended by M. Sequin, of Albi (vide *Iodothérapie*, par A. A. Boinet, p. 786), not as a substitute for the preparations of cinchona, but as possessing great value in those chronic cases which have for a length of time resisted the action of quinia.

The preparation which was adopted for use was the Liquor Iodinii Compositus (Lugol's Solution), and its effect is shown by the following cases:—

Case I.—Corporal S., aged 26 years, a native of Hesse, had for the past five years been liable to attacks of intermittent fever, on account of which he had four times been under treatment during the past twelve months. Was admitted to hospital July 1, 1866, when in the first stage of the paroxysm. Chloroform, ♏lv, was administered; the chill subsided in a few moments, and the remaining stages occurred during the sleep induced. He was placed upon Lugol's solution, ♏xv every three hours; sixty minims to be taken during the twenty-four hours. This was continued until the 6th inst., when the dose was increased to ♏xc during the day. The solution was administered in simple syrup, and produced no symptoms of irritation. It was continued until the 16th inst.; and on the 29th, there being a constant improvement in his physical condition, he was returned to duty. For the past six months there has been no return of the disease.

Case II.—Private P. McC., aged 42 years, a native of Ireland, had suffered severely with intermittent fever, contracted while on duty near Yorktown, Va., in the early part of 1864. Had frequently been under treatment, and the disease yielded but temporarily to the action of quinia. Was admitted July 1, 1866, while in the cold stage, which yielded immediately to the action of a full dose of chloroform; he was placed upon the iodine solution, ♏lx, to be taken at regular intervals, and during the twenty-four hours.

July 3. The paroxysm recurred, and again yielded to the influence of chloroform. The dose of iodine was now increased to ♏xc during the twenty-four hours.

5*th*. No recurrence. Solution continued.

7*th*. A severe paroxysm, which again yielded to chloroform. The dose of the solution was now increased to ♏c, and continued until the 12th inst., when symptoms of stomach irritation occurring, it was abandoned.

26*th*. He was returned to duty; no recurrence of the disease.

Case III.—Private C. R., aged 28 years, in whom the disease was developed September, 1865, was admitted for treatment July 3d, 1866, the chill having reappeared the previous day. Had been free from the disease since May.

July 4. The paroxysm occurred at 10.20 A. M. Chloroform, ♏lx, produced a sleep of two hours' duration.

5*th*. Was placed on Lugol's solution, ♏lx to be taken during the twenty-four hours, ♏x at a dose, which was continued until the 14th inst., when, there being no recurrence of the disease, it was discontinued, and the case held under observation. On the 18th, premonitory symptoms appearing, chloroform was exhibited, and the iodine solution continued as before.

23*d*. There being no recurrence of attack, all treatment was abandoned. On the 30th he was returned to duty, and has had no relapse.

Case IV.—Mrs. M., aged 43 years, a native of Ireland, had suffered from

the disease since Sept. 1865. Was much prostrated by the severity of the attack.

1866. *June* 30. The chill recurred at 9 A. M. Chloroform, ♏lx, procured a sleep of about thirty minutes.

July 1. Was placed upon Lugol's solution, ♏v every three hours, until ♏xxx were taken.

3*d*. The dose was increased to ♏x every three hours, and continued until the 10th inst. Has since been free from the disease.

Case V.—C. M., aged 9 years, daughter of the subject of previous case, had been liable to attacks of fever for seven months.

July 1. Upon the recurrence of the paroxysm, was brought under the influence of chloroform, ♏xxx, which produced the full hypnotic effect, this lasting for several hours, during which the attack was exhausted.

Lugol's solution, ♏iij, to be taken four times a day, was then prescribed, and thereafter continued until the 8th inst. She has since been free from the disease.

Case VI.—Private J. F., aged 32 years, contracted the ague in July, 1865. Has been twice under treatment during the year.

1866. *July* 11. The paroxysm occurred at 5.55 A. M. Chloroform, one fluidrachm, was administered without effect. At 6.5 A. M. this dose was repeated, and the cold stage was promptly arrested; but the patient, though drowsy, did not sleep. The hot stage came on with much vigour, and at 7 A. M. he vomited profusely, which relieved the severity of the symptoms. Was placed upon Lugol's solution, ♏x every three hours.

13*th*. The paroxysm occurred at 6.20 A. M. A fluidrachm of chloroform was administered, from the effects of which he slept soundly until 7.30 A. M. On awaking, some symptoms of the cold stage returned; the dose was repeated, completely arresting the chill, but the paroxysm was not ended until 3 P. M.

15*th*. The attack commenced at 7.45 A. M. The cold stage was arrested by chloroform in two seconds, and in ten seconds more the patient was in a sound sleep, which lasted until 9 A. M., when he awoke entirely free from the attack. The iodine solution was continued until the 19th. After this date, there being no return of the paroxysms, the patient was held under observation, but without treatment, until the 23d, when he was returned to duty, and has since been well.

The action of chloroform in obliterating the second and third stages of the paroxysm in Case V. of the previous paper (*Am. Journ. Med. Sci.*, July, 1865) induced the belief that this remedy might be of value in arresting the disease, or at least in breaking up its periodicity.

Case VII.—Lieut. S., whose case was reported in the former article above referred to (Case VI.), remained free from the disease until Sept. 21 of that year. On this day, at 4 P. M., he was again attacked, and I found him in a violent chill, with apparently much physical distress. A large teaspoonful of chloroform was administered, probably somewhat more than a fluidrachm, and in one minute and a half the chill had subsided. The sleep produced lasted for several hours, during which the remaining stages of the paroxysm occurred.

The disease developing as a double tertian, I proposed to the patient that the prophylactic power of chloroform should be tested in his case.

To this he readily assented; and, being furnished with a minim glass, he was directed, upon the slightest symptoms of the chill, to retire at once to his bed, and to take ♏lx of the remedy. He was also ordered Lugol's solution, ♏xv every three hours.

Sept. 22. On the occurrence of a slight headache and languor, at about 3.30 P. M., a fluidrachm of chloroform was taken. The sleep produced lasted two hours, during which some febrile excitement was the only symptom of the paroxysm apparent. On awaking, he complained of languor and depression, which continued for several hours.

23*d*. Chloroform having been taken at 1 P. M., the sleep lasted one hour, and was followed by a feeling of depression, as on yesterday, although not sufficient to prevent the performance of his duty.

24*th*. Chloroform administered at 12 M. The sleep lasted twenty-five minutes. No depression, or signs of the paroxysm.

25*th*. Complained of the excessive action of his kidneys throughout the previous night. The chloroform not again required. Continued the iodine solution until the 30th. As yet there has been no return of disease.

Case VIII.—Private F., aged 20 years, a native of the swamp district of Virginia, had for years suffered severely with intermittent fever. From a slight injury of the leg a large indolent ulcer was established, which for many months resisted treatment. During its existence he was perfectly free from the fever. His physical condition having improved and the ulcer disappeared, the cicatrix becoming firm, he was returned to duty, and, after the first exposure to inclement weather, again complained of intermittent fever.

Oct. 6. Was admitted to hospital while in the cold stage. A fluidrachm of chloroform arrested the chill, and produced a sleep of over two hours. He was placed upon sulphate of quinia; and chloroform, ♏lx, was directed to be administered upon the approach of a paroxysm, or, if possible, in anticipation of one.

8*th*. At 9 P. M. a fluidrachm was given in anticipation, and produced a sleep of three hours. No symptom of chill during the day.

10*th*. Patient expresses himself as feeling perfectly well. Chloroform not to be given unless premonitory symptoms should occur.

12*th*. Has had no chill since the 6th inst. Quinia discontinued.

When formerly under treatment, he had improved very rapidly under the influence of cod-liver oil; and, as he was somewhat debilitated, he was again placed upon full doses. Under the influence of the oil he rapidly improved; and since his return to duty, although constantly exposed to the changes of weather, he has suffered no relapse.

The very rapid and marked improvement apparently produced in this case by the cod-liver oil induced me to place others under its influence when recuperating from this disease. The following results were noted in these cases:—

Case IX.—Private A., aged 19 years, was readmitted to hospital Nov. 19, the chill having reappeared the previous day. He was a tall, undeveloped boy, who had been overworked as a printer, and badly nourished throughout his life. He was much reduced in strength, from frequent attacks of intermittent fever, which yielded but temporarily to the influence of quinia. Symptoms of pulmonary disorder also had begun to present

themselves. He was placed upon a stimulating diet, and efforts were made to unload his bowels. Lugol's solution, ♏x to be administered every three hours.

Nov. 21. A fluidrachm of chloroform was administered at 10 A. M., in anticipation of the chill. The sleep produced was profound, and lasted nearly seven hours, no symptom of the chill being perceptible. Early in the night his bowels were opened freely.

23*d*. By neglect of the attendant, the dose in anticipation was omitted, and at 11 A. M. the chill occurred. Wanting, however, much of the severity of the last attack, it yielded promptly to chloroform.

25*th*. At 10 A. M., the dose in anticipation having been again administered, he slept two hours; no sign of the chill detected; the patient evidently improved.

27*th*. Chloroform administered as on the previous day of attack, and with the same results. His bowels have become regular; his kidneys secrete freely, at times excessively; sleeps soundly; the night-sweats with which he had been troubled were much abated.

29*th*. Chloroform omitted; no recurrence of the paroxysm. The iodine solution was discontinued, and the patient placed upon cod-liver oil, the dose being increased as rapidly as the stomach would allow in recovering its digestive powers.

Under this treatment he remained until Dec. 25, when, being greatly increased in weight and strength, and the disease not returning, all treatment was abandoned, and he was returned to duty.

Case X.—Private M., aged 20 years; a shoemaker by trade; small and undeveloped; miserably weak and emaciated, weighing only 87 pounds to a height of 5 feet 4 inches. He was admitted for treatment Oct. 1, with chills, from which he had suffered severely for the past two months. He was placed upon quiniæ sulphas, gr. iij every two hours; a tablespoonful of oleum morrhuæ in an ounce of whiskey to be taken, also, morning and evening.

Oct. 3. Chill occurred about 4 P. M. Chloroform, ♏lx, procured a sleep of about thirty minutes. He then awoke, with his mind disturbed and alarmed. The dose was at once repeated, producing a profound hypnotic effect, under which the paroxysm disappeared.

5*th*. An anticipating dose of chloroform relieved him from the expected attack.

7*th*. Cinchonism becoming evident, the intervals were increased to five hours on the same doses of quinia. Chloroform not to be administered unless symptoms of attack presented themselves.

9*th*. No paroxysm has occurred; all treatment abandoned, excepting the oil, which was increased in quantity. His appetite became voracious; he consumed large quantities of the oil; improved rapidly in mental and bodily strength and in weight.

31*st*. The paroxysm, which had been absent since the 9th inst., having recurred at 5 P. M., a drachm of chloroform procured a sleep which lasted through the night. An undue mental excitement ensued, however, as was the case after the dose of the 3d inst.; so that, on awaking in the morning, he remembered many dreams with great distinctness.

Nov. 1. He was ordered Lugol's solution, ♏x, in a tablespoonful of cod-liver oil, every three hours, which was continued until the 5th. Chloroform, having disturbed the weak mind of the patient with such vivid

pictures, although it controlled the paroxysm, was directed not to be exhibited unless the chill recurred; and, to his great relief, no such necessity occurred.

The oil was continued until the end of the month, when, becoming repulsive to him, it was abandoned. He now weighed 129½, being 14½ pounds more than he had ever attained to prior to enlistment. He is, to all appearance, perfectly well.

It is the experience of the writer that the brain and nervous system are rarely excited to undue action by the exhibition of *chemically pure chloroform;* and that when this cerebral excitement does occur, it will be found to depend more upon the idiosyncrasies of the individual, or the medication to which he has been subjected previously to the use of the chloroform, than upon any peculiar property of the chloroform itself.

But two well-marked cases of such chloroform "intoxication" have come under our observation. They were encountered in hospital at the same time, and were noted as follows:—

Case XI.—Private O'K., aged 24 years, was admitted Dec. 29, with intermittent fever. The next day the chill recurred at 12.40 P. M., being violently congestive in its character; face livid; skin at shoulders, hips, and extremities becoming rapidly discoloured; pulse thread-like; surface of body clammy. At 12.50 P. M. a fluidrachm of chloroform was administered; and as in ten minutes there was no cessation of the chill, it was repeated. The administration of this dose was followed by an intense excitement, together with, as expressed by the patient, "a cramp in his heart."

The chill and congestion were arrested; but for a time he was in a stage of wild delirium, identical with that produced by alcohol. Gradually the violence of his symptoms decreased, copious emesis ensued, and he lapsed into a quiet state, the delirium, however, continuing when he was aroused. No sleep having been obtained during the day, at 9 P. M. the dose was repeated, again producing some excitement. This rapidly subsided, however, as at 9.20 he was in a sound sleep, which lasted during the night. In the morning his mind was clear and his general condition improved. He has since taken three separate doses of chloroform, neither of which produced any discomfort.

It was suspected that the specimen of chloroform which was first exhibited might have been deleterious from decomposition or impurities, but it satisfactorily answered every test.

Case XII.—Sergeant P., aged 35 years, admitted Dec. 31, with catarrh, the symptoms of which were marked. He had also been troubled for some time with obstinate constipation.

At 9.30 P. M., for the benefit of its hypnotic effect, a fluidrachm of chloroform was administered; at 9.45 he was exceedingly inebriated, and vomited profusely; at 10 o'clock he had a large and offensive stool; after which it required the assistance of two men to replace him in bed, where he was soon in a sound sleep. On awaking the next day, he presented the appearance and experienced the symptoms of one recovering from a debauch.

Chloroform has since been several times administered in this case; and although the dose was diminished each time, yet in a few moments he exhibited all the symptoms of inebriation.

Since the publication of Dr. Henry Osborn's letter in the *Medical Times and Gazette* for July 7, 1866, the question has been frequently proposed to those interested in the study of this remedy, "Is chloroform cumulative when taken internally?"

In no case under the writer's observation have any symptoms occurred which would warrant such a supposition. He would suggest, further, that the following considerations may possibly answer the question, to some extent, in a satisfactory manner:—

I. The specific gravity and peculiar volatility of chloroform, and its probably consequent penetrative power, would of themselves be likely to prevent its remaining latent in the system, and thus becoming "cumulative" in its operation.

II. The rapidity with which chloroform is eliminated by, or through, the lungs and kidneys must interfere with its accumulation, if not its "cumulative" action.

III. The character of the sleep produced—which is not comatose, like that of an *anæsthetic* or *opiate narcotic*, but natural, and from which the patient can be easily aroused, although lasting, when not interrupted, from one to two or three hours in succession, and then ceasing entirely—would lead us to suppose an evanescent although definite hypnotic action, which may be estimated, in accordance with the doses given, at least as nearly as that of any other of the familiar soporific draughts.

ART. IV.—*Ether in Laryngitis with Exudation of Lymph.*

By R. R. LIVINGSTON, M. D., of Plattsmouth, Nebraska.

IN the number of this Journal for April, 1866, Dr. John J. Black, of Philadelphia, Pa., called attention to the efficacy of ether as a local application in aphthæ, and suggested the strong probability of its proving beneficial in diphtheria. In the *Nashville Journal of Medicine and Surgery*, for October, 1866, some cases of capillary bronchitis treated with inhalations of ether are related by Dr. W. Y. Gadberry, of Lexington, Miss.

My attention having been thus directed towards ether as a remedy for exudative products, I determined to test its usefulness when the occasion offered; but it was not until the 4th of January last that an opportunity presented, and I relate the case as it occurred.

I was called at 3 o'clock P. M. to N. W., æt. 2, the messenger informing me the little girl had "croup," and was dying. Previous to my arrival the mother had administered a full dose of syr. scillæ, and I found the child vomiting and purging freely. Pulse 150; tongue slightly coated, somewhat swollen and red; fauces red with an engorged appearance;

tonsils slightly swollen; considerable tenderness over the larynx; eyes watery; breathing slightly stridulous, the mother stating that previous to emesis it was very laboured, or, as she expressed it, "the child was choking;" countenance expressive of great anxiety; and though no coughing occurred at the time of my visit, I was informed she had coughed repeatedly with a "ringing, croupy cough."

I directed inhalations of lime-water, as hot as the child could bear them, after the manner of M. Biermer, of the University of Bern, as reported in this Journal for October, 1865; also ℞.—Hyd. chlor. mit. gr. x; antim. et pot. tart. gr. j; ammoniæ hydrochlor. ʒj. M. et ft. chart. no. xij, one every two hours. I instructed Mrs. W. to keep a large, open kettle of water boiling on the stove for the purpose of moistening the atmosphere. Not considering the child in immediate danger, I left the house, requesting the mother to send for me in the event that the symptoms should grow worse during the night.

About midnight I received a most urgent request to visit the child immediately, as she was suffocating. On arriving at the house, and before entering the child's room, I was struck with the loud, wheezing noise of her respiration, and the loud, ringing cough so peculiar to the disease under consideration—the tussis clangosa of Cullen, which, when once heard, is never forgotten. I found my little patient suffering from great dyspnœa; respiration performed with difficulty; nostrils dilated; muscles of chest and neck violently exerted; lips livid, and head thrown backwards, with great restlessness, and a slightly cyanosed appearance of the countenance. On inquiry I was informed that the lime-water inhalations afforded temporary relief, but that each time they were left off the difficulty of breathing in a short time recurred. The prognosis was evidently bad, and deeming it my duty to apprise the parents of the dernier resort in such cases, communicated the opinion I entertained, and while holding out tracheotomy as a sole hope, could give but little encouragement of its proving effectual in saving the child's life.

Fortunately, at this critical moment, the suggestions of Drs. Black and Gadberry, mentioned above, occurred to me, and immediately dispatching a friend to the nearest drug store, I procured a small parcel of Squibb's ether, and though extremely sceptical as to the result, at once proceeded to administer it by inhalation according to the directions of Dr. Lente, as reported by Dr. Packard in this Journal for January, 1866, premising the inhalation by exhibiting one-half teaspoonful internally, which, as I anticipated, was swallowed with difficulty, and caused a severe paroxysm of coughing.

In precisely eight minutes from the time the patient commenced the inhalation, the abnormal muscular exertion ceased; a general relaxation took place; the pulse fell to 100; and the peculiar "flip" sound of partially detached membrane was distinctly heard during expiration; the loud wheezing noise of the breathing abated, and in thirteen minutes the child was sleeping in comparative ease. In about ten minutes more she coughed; not with the loud, ringing, metallic sound so peculiar to this affection, but with that moist rale which every practitioner hails as the harbinger of success in the treatment of this dreadful malady. The coughing was followed by efforts at vomiting, and to my inexpressible relief numerous portions of membrane were discharged, the edges having a whitish, and the centres a grayish appearance; they were oblong in shape, from an eighth to three-fourths of an inch in length, and from half a line to a line in thickness. A few times

more, at short intervals, coughing occurred, followed by emesis and the expulsion of additional portions of membrane. The vomiting now ceased, and the child slept almost naturally, the respiration being normal. Her sleep was frequently disturbed by short fits of coughing; but the intervals of rest increased in duration, and no more membrane was expelled, though it was evident that she occasionally swallowed portions without completely awakening. At 4 o'clock A. M. the child was so much better that I left, not, however, before the sunshine of hope had made the mother's heart radiant with gratitude. On my return that morning, about 10 o'clock, the child was awake—playful; and the only trace of her late imminent danger was a slight hoarseness. Since then she has entirely recovered.

This case I acknowledge does not unequivocally confirm Dr. Black's opinion of the probable utility of ether in exudative products. The well-known efficacy of the powders used and the inhalations of lime-water, it is true, have a tendency to invalidate the claims of ether as *the* proper remedy which successfully restored the child to health. When, however, it is borne in mind that the nebulized lime-water could not fail of being, to a great extent, carbonated by inhalation, from its well-known affinity for carbonic acid, and thus in a great measure be rendered inoperative, I am free to confess that the temporary relief experienced by my little patient during its administration seems attributable more to the warm moisture of the atomized water than the lime. Again, the laboured respiration returned shortly after the inhalations of lime-water were temporarily discontinued, and its behaviour partook more of the character of a palliative than a curative agent. For these reasons I do not attribute the recovery of the child to the lime-water inhalations, nor yet to the powders used, for no really marked benefit was derived from them; and it was not until the ether was exhibited that any positive change for the better occurred. For these reasons, and the almost magical effect produced under my immediate observation, I have no hesitancy whatever in ascribing this little patient's recovery to the ether.

What the action of the ether was in this case is a question fraught with interest. I incline to the opinion that more or less fatty matter must exist in the exudations, and that this substance being readily acted on, a disintegration of the membrane resulted. Certainly the form of the expelled portions gives evidence of a fibrillated structure; but we all know that even in its most perfect condition, lymph will degenerate if the process of organization is not such as to maintain vitality, and it is now pretty well settled that this degeneration is of a fatty character. Corroborative testimony of the usefulness of ether in these abnormal deposits, I am well satisfied, can be obtained if the remedy receives a trial. The effects in the case I have given were most happy, and if it proves as efficient in the hands of other practitioners as it did in mine, many a maternal heart will be gladdened when hope has almost died within it.

ART. V.—*A Brief Description of what appears to be Two Newly-Discovered Skin Diseases; one originating in the Cat and the other in the Dog. Both Cryptogamic and Contagious, and both capable of being transmitted from the Animal to the Human Body.* By J. H. SALISBURY, M D., Prof. of Histology, Physiology, and Cell Pathology, in Charity Hospital Medical College, Cleveland, Ohio. (With three wood-cuts.)

I. *Trichosis Felinis.*—This is a skin disease originating in the cat, and readily transmissible to the human subject. It resembles in appearance trichosis furfuraceæ, and, like it, has a cryptogamic cause. It is produced by a species of fungus that develops in the fermentation of cat's milk. It develops on kittens while nursing; first around the lips, nose, face, and eyes, and spreads to the head and body. It forms, with the epidermic cells, circular patches of thin rusty scurf on the face, nose, lips, and head. The hair soon sickens, curls up, dies, and crumbles away, and the eyes become sore and gradually close. Often the eyes become entirely shut. After nursing ceases this growth gradually disappears. It often lasts, however, two or three months, and may be longer, after weaning.

This disease is contagious, and is readily transmissible to the human subject from the kitten, and from one person to another. It is contracted more readily by young children than by grown persons, yet it is readily contracted at all ages. On infants and young children it spreads rapidly, attacking all parts of the body alike. It spreads rather more rapidly on the hairy than on other parts of the body. The plants attack the hair follicles, in which they develop luxuriantly, sending off branches abundantly through the epidermic and cuticular layers. The spores and filaments of this mucedinous growth resemble those of *Trichosis furfuraceæ.* They however develop much more rapidly on the human body, causing the disease to spread in isolated patches to all parts of the surface often in a few days' time.

The patches on the scalp do not differ materially from those of ordinary *Trichosis furfuraceæ*, save that the surface is, perhaps, slightly more raised and inflamed, and produce more irritation. On parts of the body not covered with hair they spread less rapidly, starting from a single point or hair follicle and extending in all directions, forming circular and oval patches of greater or less size. The patches are slightly elevated above the surrounding surface, red, and covered with scales and little elevations marking the position of the hair follicles. The colour of the patches is deeper and the irritation and itching more severe than in ordinary *Trichosis.*

In less than a week after a kitten affected with this disease comes in contact with a child the eruption begins to show itself upon some parts of the surface of the latter, usually about the hands, arms, and face, especially if the child has been caressing the kitten. Soon after patches appear on the limbs and body and rapidly spread, producing an intolerable itching,

which is only partially relieved by rubbing and scratching the patches. This is purely a local disease, it being contracted alike readily by the healthy and diseased.

Pathology.—The cells of the hair-follicles and of the epidermic layer between them are shrunken and shrivelled, and the hairs, diminished in size, become brittle, and break off and crumble away. The deeper parts of these follicles become enlarged often, and the hairs die, shrink, and fall out.

The capillary vessels in the papillary layer of the skin beneath the diseased surface become congested and enlarged, producing a reddening of the skin and a slight elevation of the diseased surface. The epidermic cells of the follicles and plane surfaces are robbed of their nourishment, become diseased and shrivelled, and finally die and fall off in dry scales. Frequently the irritation is so great that pus is formed in little vesicles, which become broken by scratching.

Cause.—The cause is purely local, and has nothing necessarily to do with constitutional derangement. It is simply a fungus, a mucedinous growth, that develops primarily in the epidermic cells saturated with the fermenting milk of the cat, which, during nursing, becomes smeared over the faces of the kittens. It does not appear to be readily transmitted from the kittens to the old cat. It does not appear, so far as at present traced, to be a disease prevailing to any great extent among cats, save during the period of nursing, and from one to three months succeeding. This plant is unlike the species that develops in human milk. For the purpose of distinguishing it I have given it the specific name, *Felinis*. This fungus finds a fit soil for its growth in the skin of persons of all ages. The cells of the epidermis, however, of the young are more tender and better supplied with nourishment than those of the mature and old. Hence this disease more readily attacks, and more rapidly spreads over the surface of the former.

In ordinary ringworm (*Trichosis furfuraceæ*), the fungoid cause exists mostly in the spore state. The plant does not advance beyond its cell condition. Its growth seems to be confined simply to cell multiplication by pullulation. In this disease the plant cells multiply by pullulation, and these advance to the filamentous stage of growth. These filaments are found running through among the cells of the epidermic layer.

Treatment.—This being a disease produced by a cryptogamic cause, any substance which retards the growth of, or destroys this kind of vegetation, becomes a more or less useful remedy. Among the agents of this class may be mentioned tr. ferri chloridi; tr. iodini; dilute sulphuric acid; dilute nitric acid; dilute hydrochloric acid; dilute nitro-muriatic acid; ointment of the per nitrate of mercury; dilute ointment of per nitrate of mercury, made with cod-liver oil; creasote; solutions of sulphurous acid; solutions of soluble sulphites; strong solutions of quinia, etc. In short, all antifermentative substances; or, all those bodies that prevent yeast from ex-

citing fermentation in saccharine and farinaceous materials, or that tend to prevent animal tissues from undergoing fermentative changes, become useful remedial agents in diseases caused by parasitic fungi. Under ordinary circumstances this plant, probably, will not grow upon the healthy body. It is quite likely that it only becomes capable of developing in such situations, after becoming animalized—so to speak—by developing either in the dirty or milk-smeared and saturated epithelial tissues of the cat.

One of the most ready remedies for perfectly eradicating this eruption is the tr. ferri chloridi. This should be painted over the eruption. A single thorough application will most generally destroy completely the vegetation and effect a cure. The application of tr. ferri is attended with considerable pain, in persons of thin and tender skin. When the patient is not willing to endure the smarting of this remedy, others of a milder character may be substituted. On young children, the oint. of the per nit. of mercury, made with cod-liver oil and the dilute citrine ointment, will be found excellent remedies. The mineral acids, when used, should be sufficiently diluted, so as not to cauterize, or produce too much irritation. They may be painted freely over the diseased surfaces morning and evening. A few days' application will suffice to effect a radical cure.

II. *Trichosis Caninis*.—This is a skin disease, affecting dogs. The eruption begins by a small pustular elevation, covered with epithelial scales; other little pustules appear around this, and beyond these others soon arise. In this way the disease gradually extends in all directions from the starting-point, from follicle to follicle, producing circular and oval patches elevated above the surrounding healthy surface about one line, and covered with dry epithelial scales, rolled and twisted up. The patches extend, and have a shape like that of *trichosis furfuraceæ*, on the human subject. Like the last-named disease, this is cryptogamic. It is produced by a parasitic mucedinous growth, which develops among the epithelial cells of the epidermis, passing down among the cells of the hair, sweat, and fat follicles of the skin, depriving them of nourishment. This causes them to sicken, shrivel and dry up, die, become detached and fall off in dry scales. The cells from which the hair is supplied with food and cell elements becoming diseased, the hair becomes imperfectly nourished, shrivels up, dies, and falls from the follicles. This disease attacks all parts of the surface of the dog. Young dogs are more susceptible to it than old ones; yet no age is exempt. It resembles closely the *trichosis felinis* of kittens; but appears to differ from it in this particular, to wit: that the fungus appears more luxuriant, large, and is more confined to its filamentous stage of development. It attacks less the hair follicles than the felinis, and extends more generally to all parts of the epidermic cell surfaces.

These diseases may, however, be both produced by the same specific cause, the difference arising mainly from the difference in the animal cell surfaces in which they are developed. On account of this and other

characteristics, I have designated these diseases by two distinct names. The development of these two growths, to their fruiting stage, will alone settle the question as to the identity or difference of the cause in these two diseases. This part of the investigation is now in progress, and I hope to soon be able to say positively whether there is or is not a difference as to cause between these diseases.

Pathology.—The cells of the epidermis, deprived of their normal nourishment, become shrivelled, dry, and smaller in size, and separate from each other to a greater or less degree. This drying and separation of the cells causes the diseased surfaces to rise above the surrounding healthy parts, the dead, dried, and curled-up cells separate and fall off, presenting a bran-like appearance. The cells of the hair follicles are affected in the same way as the plane surfaces; the hairs sicken, become small and shrivelled, die, and fall from their follicles, leaving the surface bare and inflamed.

Cause.—This is purely a local disease, produced by the development of the cells and mycelium of a mucedinous fungus among the cells of the epidermic layer of the skin. The mycelium is found developing more abundantly than the cells. The mycelium sends out filaments in all directions, branching and rebranching, forming a close network in the cell layer. As the fungoid filaments extend in all directions from the starting-point the disease extends. The development of this fungus deprives the epidermic cells both of the plane surfaces and the follicles of their nourishment. This causes them to sicken, die, shrivel up, separate and exfoliate.

Treatment.—This disease is readily cured by the application of the tr. ferri chloridi. A few applications suffice. One application each day is sufficient. After several applications of the tincture it may be well to apply the dilute citrine ointment morning and evening, till the surfaces become soft and healthy. The mineral acids, the soluble sulphites, creasote, and all anti-fermentative substances, are curative agents in this disease.

This disease is transmissible to the human subject; but, so far as examinations and investigations have at present gone, it is much less readily communicable than the *trichosis felinis*. It is much more readily transplanted upon children than upon the mature and old.

It attacks all parts of the body alike readily. It usually, however, first attacks the hands, arms, and face; other parts of the body being more or less protected with clothing.

History of Investigations.—Without troubling the reader with the tedious details of the investigation, I will here briefly state that this disease was first noticed by myself to be peculiar in the summer of 1864, while treating it in an orphan asylum, where some thirty small boys were affected with it. During the following year quite a number of cases of the disease were under my care. It was not, however, till July and August, 1866, that I commenced studying the disease with the view of tracing its source.

I had noticed that in most families where it prevailed the children

were playing with kittens that had diseased faces. On comparing the mucedinous growth on the kittens with that on the diseased children, they were found to be apparently identical in the shape of the spores, and in the arrangement of the epidermic cells. My next experiment was to procure a number of diseased kittens, and distribute them to families where there were no cats and where the children were all free from the disease. In every instance, in from five to ten days after the children began playing with the diseased kittens, they commenced breaking out with this eruption. The next step was to inoculate myself with the spores of this fungus from the cat. In about three days they began to develop rapidly, and send out filaments in all directions among the epidermic cells, producing a disagreeable itching, and forming circular and oval patches of eruption precisely like the disease previously described. The eruption yielded readily to treatment.

I now inoculated myself with the spores from the patches of eruption on a healthy child, to whom I had given, about two weeks before, a diseased kitten. The characteristic eruption followed, extending in all directions from the points of inoculation. Many other experiments were made, connected with the disease, both on the cat and dog, a detail of which would be here uninteresting and unnecessary.

Without further comment or apology this brief description is offered to the profession, hoping the subject may be of sufficient interest to induce others to make investigations in the same direction.

Fig. 1.

Fig. 2.

Fig. 3.

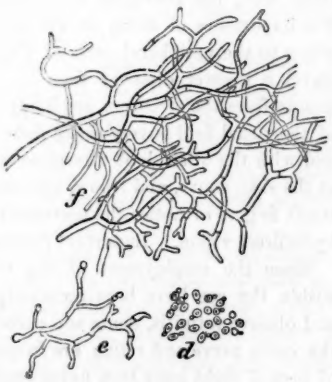


Fig. 1.—*a*. The spores of the trichosis felinis in cats.

Fig. 2.—*b*. The spores in the same disease in children. *c*. The mycelium of the fungus as it appears running about among the epidermic cells on the face of a kitten. This appearance and arrangement of the mycelium does not differ from that seen in the disease in the human subject.

Fig. 3.—*d*. The spores of the fungus producing trichosis caninis in dogs. Many of the spores are seen to be slightly polyhedral. *e*. The early development of the mycelium from the spores. *f*. The mycelium running among the epidermic cells in patches of trichosis caninis on dogs. It presents a similar appearance when growing among the human epidermic cells.

ART. VI.—*The Ophthalmoscope as a Help to Diagnosis of Brain Disease.* By HENRY D. NOYES, M. D., Surgeon to New York Eye and Ear Infirmary, Professor of Ophthalmology in Bellevue Hospital Medical College.

THE connection between cerebral disease and injury to sight has long been recognized. The precise mode of connection has not been fully understood, because in pre-ophthalmoscopic times the lesions could be observed only when autopsies were made. Even then not always were the optic nerves and retinæ examined, because their morbid processes were esteemed of subordinate importance, and it was assumed that the loss of sight was produced by simple paralysis of the optic nerves, in a manner similar to paralysis of nerves going to voluntary muscles.

It has ever been an important point in cases of brain disease to inquire into the condition of the eyes and of sight, and valuable information has been thus afforded. It has been customary to look for strabismus, for changes in the pupil, and for impairment of vision. But the nerves supplying the ocular muscles may entirely escape injury; the pupil, too, is often wholly unaffected, and, when paralyzed, becomes so chiefly through the medium of the sympathetic nerves.

The function of sight has seldom been properly investigated. In the first place, suitable test types, such as those of Snellen, Jæger, &c., are far from being in general use. Even when care is used, with or without these tests, the condition of eccentric vision is almost never examined. The importance of doing so will be seen when it is remembered that, in going to the peripheral parts of the retina, the optic nerve fibres have to travel a greater distance than to its central portions, and, being more remote from the cerebrum, are likely to be first to suffer. The exploration of the visual field is very easily done by making the patient close one eye and with the other look the observer in the face, who holds up his hand at the side, above, and below, and ascertains whether the patient is able to count fingers or notice the movement of the hand, when he can see it only by indirect vision. Important information is often to be thus elicited.

Since the employment of the ophthalmoscope pathological changes within the eye have been accurately classified. We can easily recognize and observe retinitis, acute and chronic, also neuritis optica. Atrophy of the optic nerve and retina are frequent causes of blindness. Many cases of loss of sight have been noted resulting from diseases of the intra-ocular bloodvessels, such as apoplexies of the retina, embolism of the arteria centralis retinæ, hemorrhage into the sheath of the optic nerve, and by hyperæmia as well as ischæmia of the retina.

It is important to state that inflammation and atrophy of the optic

nerves and retinæ often take place as exclusively local affections, and do not imply trouble in other parts of the nervous system.

When, however, disease of the brain or of the spinal cord does cause loss of sight, there must be physical lesions capable of being appreciated, and since intra-ocular phenomena can be so thoroughly scrutinized by the ophthalmoscope, we have no excuse for neglecting to observe them. They cannot be void of interest, and they may give us important help.

But we cannot put off inspection of the interior of the eye until loss of sight shall have declared itself. The early period of hyperæmia is of far more importance to the welfare of the patient than a later stage, when other signs may have elucidated the diagnosis, but belong to a morbid condition much less controllable by treatment. At this hyperæmic stage, we would not anticipate much or any loss of sight; therefore it behooves us to look for ourselves. Another most remarkable fact compels us to use the ophthalmoscope when no complaint has been made of dimness of sight —there may exist an advanced and strongly pronounced degree of neuro-retinitis, the result of brain disease, and cause only insignificant injury to sight. This statement appears paradoxical, but I have had opportunity of verifying it in the most positive manner.

A case in which Dr. Benedict, of Vienna, had diagnosticated disease of the cerebellum, was, in accordance with his invariable custom, submitted to examination by the ophthalmoscope. The patient's vision, by Snellen's types, was equal to 1; visual fields of normal extent; pupils active; no strabismus. The optic nerves were found congested, infiltrated, markedly elevated by swelling, and dotted by minute ecchymoses; the border of the disks ill defined; the retina also infiltrated, swollen, and containing patches of plastic exudation; the retinal vessels turgid.

I had the opportunity of observing this case, by the kindness of Dr. Benedict, and inspected the fundus oculi with great care, both by the direct and indirect method of ophthalmoscopic examination. The diagnosis was fully sustained by all who saw the case in Prof. Arlt's Ophthalmic Clinique, and there could be no doubt, from a number of symptoms, that the patient had a chronic brain disease; he had severe headache, memory impaired, gait unsteady, &c.

I find this surprising discrepancy between the physical and functional condition of the nerve and retina under these circumstances alluded to in an abstract of seven cases of neuro-retinitis from brain disease, published in the St. Petersburg *Med. Zeitschrift*, Bd. x., 1866, by Dr. Blessig, and quoted in *Klinische Monatsblätter für Augenheilkunde*, Aug. 1866, p. 273. One patient remained a half year under observation without any change in the state of the fundus oculi or in the degree of vision, there being neuro-retinitis as described above with vision =1.

Based upon these facts the argument for making ophthalmoscopic examination in all cases of brain disease becomes irresistible. Indeed, a

moment's reflection would lead to this conclusion, without any considerations drawn from pathology. The optic nerve is only an outlying portion of the brain; its extremity is fully exposed to view. Situated within about two inches of the brain, it is the only nerve in the body which we can inspect; it contains bloodvessels which communicate directly with the intracranial circulation. We thus come into relation with the cerebrum by continuity of nerve structure and also of bloodvessels. The course of the optic tracts at the base of the brain in contact with the base of the skull, renders them very liable to interference from the growth of tumours, and from local meningitis or periostitis, diseases which take place in this part of the cranium more frequently than in any other. So, too, intra-cerebral processes and diseases of the spinal cord influence the optic tracts by their relations with the corpora quadrigemina. I must also not omit to allude to the situation of the internal carotid artery, and of the great cavernous sinus in the closest vicinity to the foramen opticum. It is almost impossible for these great conduits to be surcharged, without causing congestion of the arteria and vena centralis retinæ, the former coming by the ophthalmic from the carotid artery, the latter emptying into the cavernous sinus.

While strenuously urging the importance in all cases of brain disease of making examination of the interior of the eye, I must in fairness state that in many morbid conditions of the brain there will be no lesion of the optic nerves; but at this no one will be surprised. On the other hand, the inspection of the optic nerves must be fairly made. The usual method of examination by the indirect method with a two inch objective is wholly inadequate to detect incipient morbid changes—even with an objective of three inches focus, aided by a ten inch lens behind the mirror, the amplifying power is not sufficient. It is far better to use the direct method, bringing the mirror close to the eye, and, if need be, correcting the observer's or patient's error of refraction by a proper lens, and it is also better to secure a moderate dilation of the pupil. It is hardly worth while to assert that ophthalmoscopic examination with proper care can do no harm to the patient—the notion of its pernicious influence on sight, except where there is a high degree of intolerance of light, has long ago been exploded. If a patient be unable to sit up, by bolstering with pillows, it is easy to put him in a posture convenient for examination. The room need not be utterly darkened, and a kerosene lamp will suffice.

A convenient instrument for hospital use, where a large ward can be only very imperfectly darkened, has been contrived by Galezowski. The objective and mirror are contained in a draw-tube, to be held in the hand, and the end supported on the patient's brow. The image being formed within the tube is not interfered with by surrounding light. It is, however, possible to employ with this instrument only the inverted image.

In estimating the diagnostic value of intra-ocular appearances, I would

not make too much of my subject. When lesions are found in the eye, there may coexist other symptoms which have rendered the diagnosis perfectly clear, and the ophthalmoscope may be unnecessary, but it gives confirmation and strength to the medical opinion, and in the scientific view it ought not to be undervalued.

But every practitioner knows that brain diseases are often exceedingly obscure; and these cases are of various kinds, such as the growth of tumours, subacute and chronic meningitis, commencing hydrocephalus, chronic and acute softening, etc. It is under these circumstances that the physician will be glad to get any help in diagnosis, and he may obtain it by the ophthalmoscope. He may get a positive assurance that there is intra-cranial disorder without being able to state its exact nature, but this assurance will be of the highest value in deciding his treatment, and in relieving his own mind of harassing perplexity.

We are not yet able to infer the nature of the intra-cranial disorder in view of the phenomena of the optic nerve and retina, with certainty; in some instances we can get a high degree of probability. But the subject is yet far from being fully developed; we have to make many more ophthalmoscopic observations and autopsies before we shall reach this degree of accuracy of diagnosis. In Bright's disease we can now infer with tolerable certainty the state of the kidney from the chemical and microscopic examination of the urine; but this inquiry was begun thirty-five years ago. It is scarcely five years since the line of investigation now under discussion was fairly begun. Already two treatises have appeared in France, viz: "*Etude Ophthalmoscopique sur les Altérations du Nerf Optique et sur les Maladies cérébrales dont elles dependent*, par X. GALEZOWSKI. Paris, 1866. pp. 179," and "*Du diagnostic des Maladies du Système par l'Ophthalmoscope*, par E. BOUCHUT. Paris, 1866. pp. 503." In various ophthalmic journals cases are recorded, and there is great activity in pursuing these studies.

Among the diseases in which he has made ophthalmoscopic inspection and found lesions more or less frequently, Bouchut enumerates meningitis, acute and chronic, tumours, abscess, hydrocephalus, phlebitis of the sinuses, epilepsy, insanity, delirium tremens, febrile delirium, locomotor ataxy, softening, and apoplexy. Out of thirty cases of cerebral hemorrhage, in nineteen there were marked changes observable with the ophthalmoscope.

The lesions which may be seen are as follows:—

In the optic nerve capillary hyperæmia and loss of transparency of its structure. (It is not easy to decide what tint of redness in a given case shall be considered morbid, because the complexion of the optic nerve varies about as much as the complexion of people's faces. It is only the deepest tints which can be asserted to be evidences of disease, unless there has been previous opportunity for examination, or the other eye presents a different and healthy appearance.) The nerve becomes infiltrated, its outlines lose

distinctness, and the bundles of fibres become visible in delicate lines radiating into the surrounding retina. The nerve becomes swollen and elevated to a prominent papilla. This has been most frequently noticed in cerebral tumours.

In the retina there will be similar appearances, turgidity, varicosity of vessels, serous transudation, exudation of yellowish plastic lymph—either in patches or in specks, and ecchymoses.

(It is sometimes difficult to discriminate the lesions of the retina which belong to Bright's disease from those now under consideration. The best evidence is perhaps the peculiar glistening lustre and refractive qualities of the minute specks of fatty degeneration found in Bright's disease. But on this point we must still speak cautiously.)

Besides the inflammatory states, the condition of atrophy occurs both as a primary lesion and as the usual sequence of neuro-retinitis. As a primary lesion it accompanies chronic disease both of the brain and spinal cord. When ensuing after inflammation of the nerve or retina it sometimes comes on very soon after the beginning of the disease. In the atrophy which succeeds neuritis the margin of the disk is for some time ragged, and, though discernible, shades with the surrounding tissue. Its colour is a light gray or dirty white. In primary atrophy the limit of the nerve is strongly marked, and its colour is an intense dead white. After the lapse of months the appearances in the first case change to those of the second, and it is impossible to assert what may have been the original disease.

Less frequently than the above we find embolus of the arteria centralis, or of the vein, and ischemia. Occasionally acute glaucoma comes on in consequence of cerebral trouble. Of this I shall speak again.

We are not yet in position to trace the intra-ocular lesions to their exact cause; that is, to say what kind of cerebral disease they indicate. A number of cases have been reported in which cerebral tumours produced neuro-retinitis with swelling and infiltration of the papilla. See *Archiv für Ophthalmologie*, bd. xii. abth. ii. 114. Also *Ibid.*, bd. vii. ab. ii. 74. *Ophthalmic Hospital Reports*, vol. v. part i. page 94, and part ii. page 163. *Ibid.*, vol. v. part iii. page 177. *Klinische Monatsblätter für Augenheilkunde*, vol. iv., June and July, page 164. *Ibid.*, vol. iii., March and April, page 121. *Ibid.*, vol. iv., August, page 275. See also *Sitzungsbericht der Ophthalmologischen Gesellschaft* for 1864, page 74. The last allusion describes a case of entozoa in the brain, causing neuro-retinitis and other symptoms.

This form of inflammation is called neuritis descendens, to indicate its connections. It is supposed to imply increase in the pressure of the intracranial mass. It has been found to result both from encephalitis and from tumours. It may be communicated along the course of the bloodvessels—that is, in consequence of vascular disturbance—or by a morbid process going down the sheath of the nerve and the inter-fibrillar connective tissue.

In many instances nothing can be found in the optic nerve save an undue amount of connective tissue and nuclei, while at the point where the nerve penetrates the sclera, œdema, redness, and swelling appear. This would appear to be caused by strangulation of the nerve in the porus opticus, this unyielding orifice acting, as Graefe remarks, as a "multiplicator" of the inflammatory process. The fact has been several times observed, and is a very interesting pathological phenomenon.

The case of continuous orbital neuritis optica and peri-neuritis is thought to be more frequently associated with simple meningitis, not depending on tumours. On the other hand, and showing the need of future careful observations, white atrophy sometimes follows from the growth of tumours without precedent neuritis.

A very interesting case of intra-cranial tumour continuous with a malignant growth in the orbit, is given in *Archiv für Ophthalmologie*, bd. xii. abth. ii. page 100. The orbital disease was in the left side—the intra-cranial tumour commenced on the same side, but crowded over to the right and completely swallowed up the right optic nerve and the chiasm. Prof. Virchow was unable to find any trace of either in the mass. Yet vision of that eye was perfect, and the fundus oculi normal. Death took place from meningitis.

Another case of general surgical interest is given in the same journal (Bd. xii. abth. i. page 1), where fracture of the supra-orbital plate occurred and gave rise to neuro-retinitis, and also meningitis. The symptoms came on three weeks after the injury, and while other symptoms pointed to inflammation of the brain, the fundus oculi gave a striking picture resembling the intra-cranial process.

A most interesting and elaborate paper on this subject is in *Ophthalmic Hospital Reports*, vol. iv. part iv. page 389, by Dr. Hughlings Jackson; it is the best which has yet appeared in English.

My purpose has been to draw to this subject the attention of the profession in this country, and to persuade them to take in hand the ophthalmoscope as an important aid in diagnosis. So important is it that no hospital should be without the instrument, and some one or more of its medical attendants ought to take the pains to learn to use it. Men who study the microscope can quickly master the optical principles of the ophthalmoscope, and a moderate experience will teach them the principal lesions to be observed.

I will conclude this paper by relating a few cases illustrating the foregoing remarks:—

CASE I. *Hyperæmia of retinæ and of the base of the brain.*—Oct. 6, 1866, Mr. T. B. S. J., æt. 17, N. Y., has for many years suffered severely from headache, which rarely entirely ceased, and frequently occurred in extreme severity. Many times sleep has been on this account impossible. Attendance upon school has been very irregular; mental effort would in-

crease the headache. Five years ago had two attacks of wry-neck, one of which lasted six months; besides this spasmodic contraction of the sterno-mastoid, has had no other muscular disturbance. Has no marked paralysis; had no twitchings nor convulsions; bowels regular; no nausea. Intelligence and memory good. During four months, about two years ago, was free from headache, but afterwards it returned with renewed intensity. For five years has had great difficulty in reading, because the effort gave his eyes so much pain. His vision has been clear until within four months, and now a thin cloud obscures it, both for distant and near objects. Has occasionally had diplopia. Has evident insufficiency of internal recti muscles. Is uncomfortably sensitive to light.

Vision tested by Snellen's types, is as follows: Right, $\frac{20}{60}$; left, $\frac{20}{60}$; refraction, both emmetropic; visual field, right normal; left contracted below, and fixation very painful.

By ophthalmoscope, right, nerve disk well defined; edge of choroid decidedly pigmented; capillary hyperæmia very marked; slight physiological excavation; retinal veins full; arteries small; no infiltration of retina; no other lesions. Left eye presents same appearances.

In consideration of the long duration of symptoms—and that in spite of skilful and persevering treatment—fearing too that some organic change might be going on in the nervous centres, of which the eye trouble might be only a part—I determined to give my patient the benefit of a consultation with Dr. Brown-Séquard. I gave him a note to the doctor, who sent in reply the following:—

"*Dear Dr.*:—Your patient has been suffering for a great many years (since he was only four years old) from congestion in the base of the brain and in the meninges, and has no organic affection of the nervous centres. All his symptoms, in fact, are due to the very same thing which you have noticed in his retinæ, *i. e.*, hyperæmia. This congestion of the base of the brain has gone far enough or lasted long enough to produce a slight paralysis of motion of the left limbs and a slight anæsthesia of these limbs and of the left side of the face.

"I do think that he will have a good chance of being better, if not of being cured, by the following means of treatment. First, an application of ice on the spine (between the shoulders) every other day. Secondly, the use of the two ointments for which I inclose a prescription. Thirdly, the introduction of atropine put up in gelatine disks, between the eyelids every day. This mode of treatment I have found to be most useful in neuralgia of the eye connected with hyperæmia of the retina. Fourthly, I would propose his taking the mixture prescribed for a period of about two months. I give him other rules of which he will speak to you.

I am, dear Dr., with great regard,

Yours sincerely, C. E. BROWN-SÉQUARD."

It will be observed that to Dr. Brown-Séquard's nicer methods of appreciation the existence of slight paralysis of motion and sensation became known. The treatment actually pursued was the application of ice between the shoulders for fifteen minutes every second night, and done only four times, because it was painful, and the patient caught cold. The ointments were, ℞. Aconitinæ, gr. $\frac{1}{4}$; veratriæ, gr. $\frac{1}{6}$; adipis, ʒij; also, ℞. Aconitinæ, gr. j; adipis, ʒiss. The first of these to be used night and morning on the forehead, the second on occasion of more severe paroxysm of headache. The atropia was not employed. The mixture was as follows: ℞. Ammonii bromidi, ʒiss; ammonii iodidi, ʒij; ammonia sesquicarb. ℈j; infus. calumbæ, ʒij. A teaspoonful twice a day, before meals, with a little water.

The second time after using the ice the headache began to abate.

Twelve days after beginning the treatment my notes state: Headache much diminished; able to read fifteen minutes. Vision, right $\frac{20}{30}$, left $\frac{20}{30}$. Improvement continued without interruption. He was not allowed to read; but felt able to do so. On Dec. 6th, when he was regarded as cured, the notes are: No pain in head or eyes, reads and writes without any trouble, for several hours. Is no longer sensitive to light. Vision, right $\frac{20}{20}$, left $\frac{20}{20}$. By ophthalmoscope, both optic nerves have the normal hue, retinal vessels their natural size.

The above case was to me highly instructive, not only in diagnosis, but especially in treatment. I am happy to acknowledge my indebtedness to Dr. Brown-Séquard. As to the value of the ophthalmoscope, it gave distinct visible evidence of the morbid process in the brain, which had embittered this young man's life, disqualifying him from entering upon any business. It is true, this disease declared itself by other signs, but the optic hyperæmia was certainly of no small value in strengthening the diagnosis. The success of the treatment was also in the highest degree gratifying.

CASE II. A man about 35 was suffering from a moderately severe attack of delirium tremens. His urine contained albumen; he had not slept for three nights; pulse 80, and irregular. I made examination with the ophthalmoscope, and found in both optic nerves a high degree of capillary hyperæmia and turgescence of the retinal arteries and veins. There was, however, no effusion into the retina, nor into the optic nerve. It is probable that this form of delirium is accompanied by fulness of the vessels of the brain, and that the state of the optic nerves indicated it.

CASE III. A lady about 50, having slight paralysis of the right arm, which had come on suddenly, unable to articulate distinctly, mind confused. The ophthalmoscope did not detect any lesions which could be connected with the supposed cerebral trouble.

CASE IV. A girl about 25, with paralysis of one side of the body, which had existed several months. Nothing morbid could be seen with the ophthalmoscope.

CASE V. A woman about 50, with complete paralysis of one side, including the tongue and face. The diagnosis of cerebral hemorrhage had been made, and was confirmed by the ophthalmoscope. The optic nerve was intensely congested, and so were the retinal vessels. It was difficult to distinguish the outline of the optic disk, from the surrounding red fundus.

I have introduced the last three cases, to illustrate how sometimes nothing can be seen in the eye to aid in diagnosis, and, again, strong confirmatory testimony can be obtained.

In cases of paralysis, the absence of ocular signs has a value in this respect. It signifies, either that the cerebral mischief is acute softening, or a *small* clot, or a clot situated remote from the optic tracts.

I will now relate a case, in which the ophthalmoscope was not simply accessory to the diagnosis, but gave the only positive diagnostic signs, and in which no other testimony was considered by able practitioners deserving of trust.

CASE VI. *Acute glaucoma, cerebral apoplexies, and softening.*—Mr. C., æt. 59, shoemaker, N. Y., of strictly temperate and correct habits, and, until within two years, in robust health, had been advised a year ago, by his family physician, Dr. McC., to confine himself less strictly to business, because of unpleasant head symptoms.

On Oct. 12, 1866, Dr. McC. was called to see him, suffering from severe pain in the head, not confined to any one spot, accompanied by constant restlessness and decided mental exaltation, which did not amount to delirium. He talked a great deal more than would be produced by his suffering. His respiration was peculiar, not hurried or difficult, but sighing. He would once in a while draw a deep, long breath, fully inflating his lungs, and not be able to explain why he did so. The pulse from 90 to 100, temperature natural. Of his own accord he took cathartic pills, and for twenty-four hours vomited incessantly.

For three days the headache and other symptoms continued, and then his eyes began to be inflamed. The left eye was first affected, and while symptoms began with intolerance of light, tenderness to touch, and conjunctival injection, they rapidly increased to great swelling of the lids, chemosis, and almost entire loss of vision. At the same time the headache was aggravated, and located in the forehead.

Both globes were hard to the touch, feeling like bullets under a cushion. Left eye, count fingers at twelve inches; no examination with ophthalmoscope. Right eye just beginning to be affected, tense, injected, vision good.

As there was no doubt of the nature of the case, viz., acute glaucoma, and that its proper treatment would not permit delay, I proceeded at once, 8 P. M., by the light of kerosene lamps, to do iridectomy. Putting him under the influence of chloroform, I excised in the left eye a piece of the upper part of the iris. In the right eye, I made an incision precisely similar, but refrained from cutting the iris. I was led to do this, because the inflammation was moderate, and I hoped paracentesis would suffice. The sequel will show the fallacy of this hope. Applied a flannel bandage and picked lint. The next day, eyes were much better, headache almost gone. During night, took sulph. morphiæ, gr. $\frac{3}{4}$; did not sleep, was free from pain; changed bandage; globes now decidedly soft, chemosis beginning to abate.

On the 22d, that is, the third day after iridectomy, counts fingers with left eye at six feet. The eyes steadily improved, and on the tenth day bandage was finally removed. On November 9th, a careful examination was made with the ophthalmoscope, the patient being able to come a distance of a mile and a half to my office. My notes say, in right eye there has been a little return of pain, *tension rather greater than normal.* T_1? media clear, a minute hemorrhage on nerve, the vessels bend a little at margin of disk, surface of nerve of pink hue. Left eye, *tension normal*, media clear, retinal veins little turgid, nerve pink, not cupped. Vision, right $\frac{20}{70}$, left, $\frac{20}{70}$. Right, with +8 reads Jæger 5 at 10 inches. Left, with +8 reads Jæger 9 at 10 inches. Has hypermætopsis about $\frac{1}{12}$.

Up to the time of this note, which was three weeks from beginning of sickness, the general symptoms had been variable. He was sometimes, apparently, nearly well, and again would go to bed. He had pain over different parts of the head as well as different parts of the body, now in one leg, now in the other, sometimes along the sciatic nerve, sometimes in the side, sometimes at the lower part of the back. Remaining fixed for a few hours or days in one location, it would then settle on another.

At all times, headache was the prominent pain. It was not fixed to one spot of the head. He had no paralysis and no anæsthesia. Pulse from 80 to 108. Radials hard, as if they might be atheromatous. Bowels torpid, but not difficult to move. Stomach intolerant of certain things, but no tendency to vomit, unless irritated. Urine in usual quantity, without albumen, and without casts. Would frequently draw a long sighing breath, and in a sort of involuntary way. Lungs and heart healthy. In sitting for examination, with the ophthalmoscope, would move in the chair uneasily, and say he could not help it. He had turns of marked mental exaltation, when he would talk a great deal, yet rationally. Spirits depressed, never had delirium; sleep always bad. His present behaviour is very different from his usual manner. A rather illiterate man, he yet had a well balanced mind, was deliberate in speech and action, and governed by sound principles.

In view of all his symptoms, which at first the attack of acute glaucoma seemed to sufficiently explain, it became evident that there must be something else the matter. But no definite opinion could be formed.

Nov. 18. *Glaucoma returning in right eye, acute inflammation has begun, globe hard and painful.*—(This is worthy of note, because a large paracentesis had been done at the time of the first operation, in the exact spot, for iridectomy. But the relief was not permanent. However difficult it may be to explain the way in which excision of a piece of iris can cause permanent diminution in the tension of the eyeball, the case now related offers undeniable proof that iridectomy, and not mere paracentesis, is necessary to relieve morbid tension, such as we have in glaucoma.)

Giving the patient chloroform, I did iridectomy upwards. The result was good, but vision was slow in returning. The vitreous humour remained hazy for about ten days. When it cleared up enough to see the optic nerve distinctly, I found upon it the same point of ecchymosis noted before, and the colour of the surface normal. No signs of glaucoma. In the mean time the general symptoms were of the same character as before, only that his strength was more diminished. Headache oftentimes most intense. General neuralgia rather less than formerly. Spent a good deal of time in bed, yet would sometimes be able to go down stairs. Sleep very light.

The remedy which seemed to give most relief was the bromide of potassium, at night, in scruple doses. He called these his sleeping powders. Nervines and tonics were administered; opium was not tolerated. In a few instances, ice applied between the shoulders gave relief to the headache, but it ceased to be efficacious.

Dec. 5. About this time I noticed a change take place in the appearance within the right eye. The optic nerve began to alter in colour; its usual pink passed into a decided pallor; the retinal vessels remained unchanged. As this hue became decidedly pronounced, and indicated atrophy of the nerve, the conviction was forced upon me that there must be serious disease of the brain, and this the cause of all the trouble.

I announced my opinion to the family, and gave an unfavourable prognosis. The gentleman who had the charge of the case, one of our most sagacious practitioners, was not able to share in the positiveness of my opinion, although he would not deny that there might be brain disease. The absence of paralysis and anæsthesia, the clearness of the intellect, and the want of fixedness in the location of pain, were, in his view, serious obstacles to the diagnosis. He thought the symptoms might be explained by hysteria, the cause being obscure.

Another medical man was called in consultation, one of our best pathologists and teachers. He emphatically declared that there was no evidence of brain disease. He suggested that malaria might have caused the troubles, and as the stomach had become irritable, advised injections of a solution of sulphate of quinia per rectum. This remedy proved as useless as all others. Soon the anxiety of the family induced them to try another mode of practice, and homœopathic gentlemen were called. On the certificate, they stated the cause of death to be general debility.

Patient died Jan. 7th, three months from the beginning of his sickness. For a few days preceding death, his condition was as follows: Rapid and extreme prostration; uncontrollable vomiting for thirty-six hours, after this, coma continuing forty-eight hours, then death. Symptoms conclusively declaring the existence of cerebral disease. There were no symptoms of either heart or lung trouble, no cough, no difficulty of breathing, no expectoration. These facts were ascertained by careful inquiry from the family.

Autopsy seventy-two hours after death.—Weather cold; body on ice and nearly frozen. Only the head could be examined. The scalp thick and very difficult to turn back, because almost congealed by the cold. Nothing peculiar about calvarium. Membranes a little congested; no effusion. At the base of the brain, on arriving at the optic nerves, very great care was used, and at the sella turcica, a black and softening mass was seen, at first supposed to be a tumour. After the brain was taken out, the following was observed: In the tuber cinereum and infundibuliform process and pituitary body, an effusion of blood which was of a dark colour, evidently of somewhat advanced age. Inasmuch as these parts are directly behind, or in contact with the optic commissure, the latter must have been influenced by the clot.

Another clot, about the size of a hazelnut, was found in the right lobe of the cerebellum, at its posterior edge. This too, was evidently of some weeks' or perhaps months' duration. The substance of the brain was firm to the feel; on slicing down the hemispheres, nothing abnormal was seen. The corpus callosum firm and healthy looking. When the lateral ventricles were opened, the septum lucidum, and fornix, and all the tissues adjacent, were softened to a degree of almost complete fluidity. The white fibres floated up like delicate fringes. They appeared as if ravelled out into fibrillæ. So great was the softening, that no complete examination of these parts could be made. Their condition was in marked contrast to the state of the remaining white structures of the brain, as, for instance, the corpus callosum. I emphasize this, because so much time had elapsed since death, as to give rise to the suspicion that the softening might be post-mortem.

Furthermore, as explanation of the softening, and the key to all the lesions, both internal carotid arteries were perfectly atheromatous. Their walls were stiff; they stood up with open mouths, and looked like goose-quills. The basilar artery and posterior cerebral arteries were collapsed and apparently healthy.

Microscopic examination could add little to the information obtainable by the naked eye, because the interesting parts had undergone so great degeneration.

The right optic nerve was removed as far as to the eyeball and microscopically examined by my friend, Dr. F. Delafield. He reported the nerve fibres disintegrated to a granular condition, and so completely disorganized

as to leave no trace of their normal structure. There was no increase of connective tissue.

Taken together, the lesions gave full justification to the diagnosis which the ophthalmoscope furnished—that there was serious and fatal disease of the brain. But no opinion could be formed as to the nature of the disease.

Acute glaucoma, from cerebral apoplexy, is certainly uncommon. Bouchut mentions two cases, one of them well made out, the other doubtful. It seems to me most probable that the apoplexy at the base of the brain must have occurred at the beginning of the sickness, and that situated in the close vicinity of the optic chiasm and near to the cavernous sinus and carotid arteries, it was the cause of the acute glaucoma. The cerebellar apoplexy was probably of little influence. The development of atrophy in the right optic nerve might have been due to the changes following the apoplexy, or it might have been caused indirectly by the softening at the middle of the brain. The softened portions involved the neighbourhood of the tubercula quadrigemina, and they might have begun to share in the disintegration.

The general symptoms, so anomalous in character, and so puzzling to sound and observant practitioners, must undoubtedly be referred to the brain, although it may not be possible to understand precisely their connections.

Finally, I may add that the basilar process of the occipital bone was unusually soft; it could be penetrated by the point of the scalpel with undue facility. It seemed to be hyperæmic, and the suggestion occurred to me that its condition might have had something to do with the peculiar respiration, by irritation of the roots of the pneumogastric nerve.

This case belongs to a category of which, as yet, few examples have been observed, and, so far as I have been able to find, none are recorded. It gives us additional data to aid us in the diagnosis of difficult and obscure cases of brain trouble. This subject demands immediate and thorough study, and we may yet be able to see with the ophthalmoscope, not only that there is brain disease, but pronounce, with strong probability, upon the character and exact location of the malady.

NEW YORK, Feb. 1867, 65 Madison Avenue.

ART. VII.—*Malignant Pustule, as it appeared in the Vicinity of Las Cruces, New Mexico, in* 1865. By A. H. SMITH, M.D., Assistant Surgeon U. S. A.

DURING the summer of 1865, there appeared, in the vicinity of Las Cruces, New Mexico, an epidemic resembling the charbon, or malignant pustule of surgical writers.

The disease usually made its appearance in the form of a papule, which, from the first, was of a livid or purple colour, whence the popular Spanish name of the affection, "*grano negro.*" Even at this early stage, when the external manifestation of the disease was so slight as scarcely to attract attention, there could be felt underlying the papule, and extending for some distance beyond its base a disk of hardened tissue, almost cartilaginous in its firmness, and embracing the whole thickness of the skin as well as a portion of the cellular fascia beneath. In cutting into this the knife creaked as if dividing cartilage, and the resistance was so great that care was necessary to avoid inflicting a deep gash in the adjacent softer tissue, as the limit of the indurated portion was passed. The cut surfaces presented the appearance of a dense fibrous texture, containing in its meshes a deposit of black pigment. The boundary of this mass was abrupt and well defined, giving it the feel of a disk of sole-leather imbedded in the tissues. When incised but little blood flowed from it, and it seemed much less sensitive than the surrounding skin.

Within a period, varying in different cases from two hours to two or three days, the papule passed into a form closely resembling the vaccine pustule on the eighth day, except that the colour was deep purple or black. The surrounding tissues were at the same time the seat of an erysipelatous inflammation, often of great intensity, and spreading with frightful rapidity. Thus, in one instance, within six hours after the papule located on the left side of the chin was observed, the swelling had progressed to such an extent as to close the left eye completely, while the under lip protruded at least an inch beyond the upper one, which was itself somewhat swollen. In other cases the progress was much more gradual, and four or five days elapsed before the patient became sufficiently alarmed to call in medical aid.

The progress of the disease was marked by a steady increase in the size of the pustule, and a corresponding increase in the severity and extent of the surrounding inflammation. But in some cases the pustule remained stationary, while the erysipelatous inflammation extended, and became more and more formidable in its character. The skin became more brawny, and the cuticle was raised by the effusion of a purple or black serum, forming blebs often of considerable extent. Sloughing of the skin did not occur in any case which came under my observation, probably owing to the free incisions which were made for the relief of tension.

The pain was of a burning character, but only in exceptional cases was it very severe.

The constitutional symptoms seemed to bear an exact ratio to the extent of the local affection. The tongue was moist, and covered with a yellow or brownish fur, and the breath was very offensive. The bowels were usually constipated, but in some cases diarrhœa set in on the second or third day of the disease. The pulse, at first full, quick, and strong, soon became small and frequent. The skin was relaxed, and often covered with

perspiration, especially in feeble persons and children, and when the disease was fully developed; but in robust patients, in the early stage it was hot and dry. Anorexia, to a greater or less extent, was present in nearly every case. In severe cases the mind was heavy and dull, but in no instance was there delirium. The only patient whom I saw who succumbed to the disease died comatose. The pustule, in this instance, was located in the face.

The greatest diversity existed in different cases in the extent of the disease. In some the papule did not exceed the size of a split pea, there was little or no surrounding inflammation, and an absence of all constitutional symptoms; and in a few days all traces of the disease disappeared. In these cases it seemed that the seed had fallen upon unfavourable soil, in which it could not take root. At other times the soil seemed to have been already prepared, and only awaited the seed to yield a speedy and abundant harvest of mischief.

In favourable cases a period arrived when the pustule ceased to enlarge, and the surrounding inflammation gradually resolved. A number of days then elapsed before the ulcerative process began, but eventually the entire disk of hardened tissue separated and was thrown off, leaving a healthy granulating surface.

A careful inquiry into the cause enabled me, in the majority of cases, to trace it to infection from diseased animals. A distemper was prevailing at that time to a slight extent among cattle, and, though I had no opportunity of seeing an infected animal, I obtained a meagre description of the symptoms from the Mexican rancheros. The animal, it was said, ceased feeding, became restless and uneasy, and soon began bellowing as if in great pain. Then it was seen to throw its head suddenly into the air and run violently for a short distance, and fall to the ground. Regaining its feet it would rush wildly forward, bellowing piteously, then rearing on its hind legs again fall. The duration of the disease was but a few hours. The poorer class of the natives did not scruple to eat the flesh of animals dying in this way, while some, a little more fastidious, killed the animal for beef as soon as the disease was well pronounced, taking to themselves great credit for not following the disgusting example of their neighbours.

Whether simply eating this diseased meat was sufficient of itself to produce infection it was impossible to determine, although many of the patients declared that they had not touched it with their hands. Still the fact that in every instance the pustule occurred upon a part of the body not protected by the clothing, goes far to confirm the view of the disease that it is not in any degree the local manifestation of a constitutional infection, but always the result of direct local inoculation.

One instance occurred in which the source of the disease and the mode of infection were demonstrated with remarkable clearness. Two men were engaged in skinning an animal which had died of the distemper. One of

them had a pimple on the face, which he had scratched with his nails until it bled. The other had received a scratch in the face from a thorn in passing through the chaparal. The day was extremely warm, and the men frequently wiped the perspiration from their faces with their hands, covered as they were with the fluids from the animal. In a few hours, pustules were developed upon the abraded surfaces in both individuals. The disease proved fatal in one case (which I did not see), the other recovered with a considerable loss of tissue from the cheek.

There were cases, however, in which I failed to trace the disease to any infection, the patients stoutly denying that they had eaten any flesh of an animal that had died, or that had any symptoms of disease, or that they had handled, or been in the neighbourhood of any such source of infection. Still I am of opinion that the heavy denunciations which fell upon the heads of those who confessed their shortcomings at the beginning of the epidemic, had the effect thereafter to discourage others from telling me the truth.

One case, occurring in the hand, made its appearance immediately after handling a number of dry hides.

The *treatment* which I found the most efficacious was the following: The pustule, with the hardened tissue surrounding and underlying it, was freely divided by a crucial incision, and a poultice, containing charcoal and chlorinated soda, applied. If the strength of the patient would admit its employment, a brisk cathartic was at once administered. Tincture of the chloride of iron was given in large doses frequently repeated. Brandy, carb. of ammonia, etc., were employed in advanced cases, if the state of the pulse seemed to demand it. Opiates were given when required to allay pain and procure sleep. The tinct. ferri chlor., however, was my principal dependence. In nearly every instance it arrested the disease almost immediately. Unfortunately, my supply was limited, and gave out towards the close of the epidemic, after which I found great difficulty in managing the disease. All the other forms of iron within my reach were tried, but found comparatively useless, and I attribute the loss of my one fatal case chiefly to the want of this remedy.

The following is an illustration of the result of treatment in an apparently hopeless case:—

CASE. I was called to see a woman in the neighbouring town of El Picacho, and, on arriving, found her in the fifth day of the disease. The pustule was seated upon the back of the right wrist, but it was now scarcely distinguishable from the swollen and discoloured tissue which surrounded it. The whole limb was swollen to at least twice its normal size, and the outer side was one series of blebs, filled with a purple or black fluid. The erysipelatous inflammation extended from the arm over the front of the thorax to the median line. Pulse very small and weak, and too frequent to be counted accurately. Skin cool, pale, and relaxed, and covered with a clammy sweat. Mind heavy, the patient taking no notice

of what was passing in the room, but giving rational answers when questioned in a loud tone. When asked, stated that the arm was very painful, but otherwise made no complaint.

Yielding to the urgent request of the friends that I should do *something*, even if there was no hope, I determined to treat the case vigorously, though with no expectation of a successful result. Four incisions, from three to six inches in length, were made in the forearm and arm, dividing the skin and superficial fascia. An immense amount of bloody serum was evacuated, and the tension materially relieved. The arm was then enveloped in a poultice of charcoal and yeast. Tr. ferri chlor. ʒj, whiskey ʒj, were given, to be repeated every two hours until five doses had been given, when the quantity of iron was to be diminished one-half. Beef-tea was to be given as freely as the patient's stomach would bear it. Before I left the patient expressed herself as feeling somewhat relieved. A supply of medicine was left, and careful directions given, and the husband was instructed to inform me as to her condition on the following day. This he failed to do, and I took it for granted that the case had proved fatal, and did not repeat my visit. Subsequently I learned that the woman recovered, but with her arm perfectly useless. The improvement was so great during the night following my visit, that the husband did not consider it worth while to cross the river (then very high) to report to me, inasmuch as he had still a sufficient supply of medicine.

The source of infection in this instance was a goat, which, having the symptoms of the distemper, had been killed "*for fear it would die*," and the flesh eaten by the family. Although several persons ate of the meat, but one was affected, but as she was the one who prepared it for the table the case only goes to corroborate the view of exclusively local infection.

In a few cases in which I saw the patient very early and before any constitutional symptoms had appeared, I contented myself with destroying the papule very thoroughly with caustic potash, after which there was no further trouble.

The duration of the epidemic was about two months, beginning in July and ending in September.

ART. VIII.—*The Appearance of the Membrana Tympani and Fauces in 296 Cases of Acquired and Congenital Deaf-Mutism.* By D. B. ST. JOHN ROOSA, M. D., Professor of the Diseases of the Eye and Ear in the Medical Department of the University of the City of New York, and GEORGE M. BEARD, M. D., of New York.

THE examinations of which the following paper aims to give an account, were made by us at the New York Institution for the Deaf and Dumb, and at the American Asylum for the Deaf and Dumb, in Hartford, Conn. Our labours at the first-named institution were interrupted by the breaking out

of typhoid fever when we had examined but seventy-five cases. At the Hartford Asylum, however, we were able to examine nearly every case in the institution.

We are greatly indebted to Dr. L. A. Rodenstein, the physician to the New York Asylum, for courtesies extended and facilities afforded for conducting our examinations, also to Dr. Peet, the President, and Mrs. Hotchkiss, the Matron. In Hartford, the Rev. Collins Stone, the Principal, gave us hearty assistance; and his son, Edward C. Stone, M. A., one of the Instructors in the Asylum, afforded us his personal aid during the whole period of the examinations, thus greatly expediting our labours. To all of these we herewith present our grateful acknowledgments.

The ears were all examined by means of Tröltsch's concave mirror and the tubular specula, the source of illumination being ordinary daylight.

The assigned cause of the deaf-mutism was ascertained in the case of the Hartford inmates by reference to the books of the Institution, where it was recorded as given by the parents or friends of the children. In New York the same information was furnished either by the pupils themselves or by the matron.

While we recorded the cause just as it was furnished us, we have not always regarded it as correct, but have placed several cases among the "congenital" which were deemed "acquired" by the friends or the pupils themselves. The persons examined were, with very rare exceptions, in excellent general health at the time of examination.

Inasmuch as nearly all the drums are described as pathological, it may be well to state what we deem its physiological state. We consider a normal membrana tympani, examined by reflected daylight, to be a translucent pearl-gray membrane (Politzer) with the head and handle of the malleus distinct, not very prominent, however, or projecting much above the plane of the membrane. On the lower segment is a reflection of light of a general triangular shape, its apex resting on the lower extremity of the handle of the malleus. The angle formed by the membrane with the upper wall of the external auditory canal is one of about 140° (Tröltsch). We have verified these ideas as to a normal membrana tympani by numerous recent examinations of ears having their normal function unimpaired.

We understand by chronic pharyngitis a chronic inflammation of the mucous membrane of the pharynx, in which some or all of the following objective symptoms are present. Hypersecretion from its entire surface, as evinced by the collection of masses of mucus or muco-pus; enlargement of the mucous glands, causing them to resemble granulations; a dry glassy appearance of the mucous membrane, which is traversed by enlarged veins. The nasal cavities sometimes participate in the morbid condition.

The object of our investigations has been entirely *etiological*, in no sense *therapeutical*. In this respect it differs from that of most of those pre-

viously made by others. Among our deductions, however, we place one which urges the necessity and probable usefulness of treatment for most of the acquired and for some of the congenital cases, not for the purpose of restoring the hearing, but for the sake of relieving other distressing symptoms, which in some cases are not without danger to life. Should the verdict of the profession give any value to the statistics here presented, we propose to continue our investigations. Examinations of the dead subject, in cases of deaf-mutism, such as have already been made to a limited extent, especially by *Voltolini*, of Breslau, should be undertaken in order to confirm or disprove the deductions which seem to us to be indicated by our examination.

The tables we have prepared showing the sex, age, appearance of the membrana tympani and of the pharynx, and the assigned cause in each case, with our remarks, would occupy too much space for publication in this Journal, and we therefore are obliged to confine ourselves to the following summary of the results.

Summary.—Whole number of cases examined, 296.

Classified as probably *congenital*, 182, or 61 per cent.

Classified as probably *acquired*, 114, or 39 per cent.

The membrana tympani was found to be sunken or opaque, or showing other evidences of former inflammatory action in the cavity of the tympanum—

In 118 of the congenital cases.
" 16 " " " it was congested.
" 22 " " " " normal.
" 4 " " " there was calcareous degeneration.
" 14 " " " it was absent.
" 8 " " " " not clearly seen on account of wax in the meatus.
182

In 80 of the acquired cases the membrana tympani was present.
" 29 " " " " " " perforated with ulceration in it and the middle ear.
" 2 of the acquired cases there was calcareous degeneration.
" 3 " " " it was not clearly seen on account of wax.
114

Remarks.—The following facts are worthy of note: There was chronic pharyngitis, or tonsillitis, or both in 111 of the congenital and 89 of the acquired cases; making in all 200, or *more than two-thirds of the whole number of cases examined.* The intimate connection between the faucial mucous membrane and that of the middle ear is thus indicated.

The inmates of the New York Asylum were affected with diseases of the

throat to a greater extent than those in Hartford. The greater proximity to the sea-shore of the former place may explain this.

It is probable that a large proportion of deaf-mutes, in both congenital and acquired cases, are annoyed by the subjective symptoms of inflammation of the middle ear. We made inquiry of the inmates at the New York institution as to this, and we should judge that about one-half of these are victims to the various phases of *tinnitus aurium*.

Our information as to the parentage of the mutes is not very complete, since the friends do not readily admit or speak of intermarriages. Yet a few striking cases were observed. A certain district in Massachusetts, where the inhabitants are shut out from the world, and where intermarriage is the rule, furnishes every year a certain number of pupils to the Hartford Asylum.

Scarlet fever is the assigned cause, and undoubtedly the real one in nearly one-half the acquired causes. The existence of hereditary predisposition to deaf-mutism was observed in about 1 in 12 of the 225 Hartford cases.

After some study of our statistics, perhaps we are justified in concluding—

I. *By far the greater number of the cases of congenital deaf-mutism, as here observed, had their origin in inflammation of the middle ear, occurring in intra-uterine life.*

(*Perhaps some of the cases classed as congenital occurred from the same cause in early infancy.*)

II. *If physicians generally were properly instructed as to the pathology, diagnosis, and treatment of the diseases of the ear, there is little doubt but that very many of the cases of acquired deaf-mutism could be prevented, or that they could be greatly modified in their character.*

III. *A great majority of those affected with inflamed fauces and ulcerating ears, could be relieved by treatment from some of the distressing and dangerous symptoms. We believe that every deaf and dumb institution should have attached to it a physician who is competent and willing to look after the ears as well as the other organs of the inmates.*

ART. IX.—*Aneurism of the Common Carotid Artery; Compression; Cure.* By JOHN G. KERR, M. D., Canton, China.

A CHINESE soldier, aged 32 years, was shot in the left side of the neck in June, 1865, the bullet lodging there. The patient was admitted into the hospital of the Medical Missionary Society on the 27th of Jan. 1866. At that time there was a tumour on the left side of the neck about the size of a man's fist, which extended from the angle of the jaw almost

to the clavicle. The pulsation and bellows sound indicated clearly its character.

The only chance for ligature was at the inferior triangle. I had not seen any report of an aneurism of the carotid treated by compression, and the most recent works on surgery do not recommend it in this locality. Prof. Gross, in his invaluable work on surgery, says: "It is obvious, from the relations of the vessels and nerves of the neck to the tumour, that compression, now so much employed in the treatment of aneurism of the lower extremity, cannot be brought in play here, the parts being intolerant of the requisite manipulation, to say nothing of the obstruction which it would occasion to the return of the blood in the internal jugular vein," &c. *A priori*, these obvious objections would seem conclusive. The case here reported has, I hope, established the fact that aneurism of the carotid is amenable to the use of compression, and that a dangerous and difficult operation may be replaced by a mild and successful application of surgical art.

It was after much deliberation and hesitation that it was decided to try compression in the present case, and it was only an experiment at the beginning. The Chinese pupils in the hospital were taught to apply pressure with the thumb. At first they took turns of an hour each, but afterwards the time was limited to half an hour.

At the commencement of the treatment, the pressure caused in eight or ten hours such a degree of pain that it was necessary to desist. After an interval of a few days the repetition of the experiment was followed by excruciating pain which extended to the whole side of the head.

Doubts as to the propriety of continuing the treatment arose, but it was found that after a few days' rest the pain subsided, and gradually a tolerance of pressure was established. In the course of a few weeks the patient was able to bear continuous pressure day and night. It was not until this had been attained that the aneurism began to show any signs of yielding. Even then it was necessary to give periods of rest every three or four days. During the latter part of the treatment it was found that a less amount of pressure controlled the pulsation, and it was only kept up during the daytime, or from 6 o'clock A. M. to 10 o'clock P. M.

No record was kept of the exact length of time during which compression was applied, but it was not less than twenty days. The patient was discharged April 20, so that the treatment extended over a period of eighty-two days. At the time he left the hospital the pulsation and bellows sound had entirely ceased and the tumour had sensibly diminished in size. The patient was seen again May the 14th, when the tumour had diminished in size fully one-third.

The following inferences may be drawn from the above case.

1st. That a tolerance of compression may be established in the treatment of aneurism, even where important nerves are connected with the artery.

2d. That when severe and even excruciating pain prevents continuous compression, it is important to keep up, at intervals and with great caution, such amount of pressure as can be borne.

3d. That a powerful remedy, such as compression is proved to be, may often be successful in the most hopeless cases, if applied with perseverance through a sufficient length of time.

ART. X.—*Removal of a Fibrous Polyp from the Inferior Anterior Surface of the Right Vocal Cord with the aid of the Laryngoscope.* By J. SOLIS COHEN, M. D. (With a woodcut.)

ON the 9th of January last, Mrs. W——s, of this city, æt. 47, completely aphonic, presented herself for a laryngoscopal examination. Her story ran thus: She had been very hoarse for more than a year, and for the past seven months completely aphonic. She had been variously treated for laryngitis and for chronic bronchitis, with internal remedies, vesication externally with croton oil, &c. She had recently come under the care of Dr. L. Turnbull, of this city, who, suspecting an organic cause for her aphonia, had sent her for an examination.

The peculiar character of her whisper—laryngeal, and not oral as in functional aphonia—led to the inference that some mechanical impediment prevented due vibration of the vocal cords; and the introduction of the laryngeal mirror revealed the existence of a small, whitish, oyster-like polyp, the size of a large common white bean, growing from the under surface of the true vocal cord of the right side, within a line of its anterior attachment to the thyroid cartilage. The following day Dr. Turnbull confirmed the diagnosis, and confided the patient to the care of the writer.

During inspiration the polyp remained suspended in the lower cavity of the larynx; but expiration propelled it upwards so as to encroach considerably upon the aperture of the glottis, which was much smaller than usually observed. As the true vocal cords approximated in response to attempts at phonation, the polyp, as it was raised, was observed to twist round upon its attachment, so as to expose a portion of its anterior surface, wedging between the lips of the glottis, and thus preventing their approximation. The cause of this twisting was not recognized until after the removal of the tumour. This diagnosis and peculiar appearance was confirmed by Profs. Gross, H. H. Smith, Dickson, Drs. Agnew, Da Costa, Turnbull, Wm. H. Pancoast, and others.

On questioning the patient as to the existence of subjective sensations, she related that her annoyances were increased during damp weather—physical causes favouring a temporary increase in the size of the polyp; that she was frequently compelled to sleep with her head elevated to secure easy respiration, and freedom from distress; that she would sometimes experience a sudden paroxysm of impending suffocation, promptly relieved by coughing—this from sudden impaction of the polyp, and release following the mechanical effort; farther, that she would be occasionally troubled with a peculiar sensation while swallowing, "a sort of explosion-like in the throat, just as if the finger was pressing down the cork of a bottle of porter, that the gas was forcing out," with a sense of constriction beneath the sternum—in all probability recoil of the expiratory current; a similar sense of constriction at the same point accompanied every effort at articulation; rapid breathing would be accompanied with "flapping in the throat;" and any undue exercise, as ascending a staircase quickly, or hurrying to catch a street car, would bring on dyspnœa and temporary distress.

Jan. 14th the treatment was begun by introducing instruments within the larynx, moving the polyp with a bent probe, so as to accustom the parts to manipulation. The tumour presented a firmer resistance to the

sense of touch, as communicated to the finger, than had been anticipated; but neither at this time nor on any of the subsequent occasions in which this training process was repeated, could the pedicle of attachment be discerned.

At the eighth interview the polyp was successfully seized, and removed entire, with a single effort. The instrument employed was the *pince à polype du Docteur Fauvel*, figured in the accompanying cut.

This instrument is a long pair of steel forceps, properly curved, the blades of which terminate in small scoop-like expansions, serrated, and inclosing small prongs; the rings on the handle are furnished with a stout sliding catch, which, when closed, secures the gripe.

On the 17th, while manipulating with the forceps, the polyp was seized at its base, but slipped from the instrument. The result, as witnessed by Prof. Dickson, was to congest the polyp, which became intensely red; a drop or two of blood escaped from a puncture made by one of the prongs, and was expectorated; shortly after the polyp was restored to its original colour, except a livid spot around the point where it had been pierced. Considerable shrinkage took place, followed by a change in the character of the voice, which subsequently emitted an occasional hoarse laryngeal tone, markedly different from the previous whisper.

At the time of removal, Jan. 22d, the polyp was seized close to its attachment, and came away entire; it had no pedicle. The muscular effort requisite to detach it was trifling, and the sensation to the patient, as if a good hold had been taken, and it had slipped from the instrument. The emotion of the patient at breathing so much more freely than she had done for more than a year, prevented spasm; but, contrary to expectation, there was no immediate improvement in the voice. There ensued a trifling bloody expectoration to the amount of half the capacity of a lady's thimble. On examination with the mirror, no remnant of the tumour could be observed; but both vocal cords, and all the adjacent parts, had become intensely congested. It was not deemed requisite to make any local application within the larynx, and half an hour after the operation the patient returned to her home with instructions to lie down, and drink barley-water.

The tumour, as removed, was slightly congested, of the size of a large common white bean, smooth on its exterior, but somewhat irregular in

outline; compressible and elastic, but not soft to the pressure of the finger-nail. Shortly after the removal it was examined under the microscope by Dr. Wm. H. Pancoast, and proved to be a fibrous polyp, instead of a gelatinous one, as had been diagnosed in the mirror.

No assistant was employed in the operation; no support to the head of the patient; no apparatus to hold the laryngeal mirror; no instrument to depress the tongue; the design from the first having been to take advantage of a fortunate opportunity for removal without the co-operative consciousness of the patient. Wherever it is at all practicable, it is of great value to all concerned to use as few appliances as possible; for any restraint on the part of either patient or operator increases the difficulty of manipulation. The patient sat at ease upon a stool, holding the tip of her extruded tongue between her fingers and thumb, her handkerchief being interposed to prevent slipping. The light of a coal-oil lamp was reflected into the fauces from Tobold's pocket condenser, the laryngeal mirror being loosely held with the left hand, and the operating instrument with the right.

The day after the removal of the polyp, laryngoscopal examination showed the right vocal cord still vividly red, but the left cord had regained its normal colour; it was considerably deflected outwards, and was but half the width of the other cord, having apparently undergone atrophy, evidently the result of frequent compression by the tumour. Just beneath the commissure connecting the cords anteriorly, there was perceived a small red projection, showing that the polyp had had a second attachment at that point. This double attachment to the rentrant angle of the thyroid cartilage, and to the under surface of the cord, explains the mechanism of the peculiar twisting of the polyp observed whenever it prevented the approximation of the cords in attempted phonation. The voice had improved, but, though distinctly sonorous, was hoarse and rough. No local application was made.

Two days subsequently, on the 25th inst., the patient returned; the congestion having now diminished considerably, the little protrusion at the thyroid angle, just below the anterior angle of the glottis, as well as the adjacent mucous membrane, was freely cauterized with the solid nitrate of silver. Now the spasm was intense, the patient suffering much more than from any previous manipulation; but the coughing soon ceased, and the immediate improvement in the character of the voice was marked.

Examining the parts two days after this application, it was seen that superficial ulceration had taken place at the spot cauterized, and over so much of the adjacent mucous membrane as the polyp had been wont to press against during inspiration. This was not at all painful, but had provoked frequent expectoration. The ulcerated surface was gently swabbed with a brush that had been dipped into a solution of bromide of ammonium in glycerine ʒij ad fʒj.

As this ulceration gradually healed, the parts resumed their normal appearance, and the voice steadily improved. No second application of the caustic was necessary.

At the latest date the appearance of the parts was normal, with the exception of the atrophied appearance of the left vocal cord, though its free border presented a straighter outline. No trace of the existence of the tumour could be recognized, and the voice had resumed its natural timbre; but although less clear than formerly, was sonorous and powerful, much to the gratification of the patient, for now she "can holloa

up-stairs to the children," the inability to accomplish which domestic desideratum had been not among the least of her deprivations.

This case is recorded as one of peculiar interest, from the fact that the polyp grew in the larynx of a female; that it occupied the right vocal cord, was a sub-glottic tumour, and had an attachment to the rentrant angle of the thyroid cartilage—all of which conditions are severally exceptions to the general history of laryngeal polyps.

PHILADELPHIA, Feb. 5, 1867.

ART. XI.—*Description of a Bed for Invalids which admits of Leg Exercise, and of a Noiseless and Easy Adjustment to any Point between a Horizontal and Vertical Position.* Read before the Massachusetts Medical Society, May 30, 1866. By EPHRAIM CUTTER, M. D., of Boston, Mass. (With a wood-cut.)

IN 1864 a married lady, 45 years of age, mother of several children, came under my care with the following signs and symptoms:—

1. A full, round, fluctuating swelling, as large as a man's fist, seated below the left great trochanter, and occupying the middle of the outer aspect of the thigh. It had been previously subcutaneously punctured at its lowermost middle part with a grooved exploratory needle, which brought away a fatty fluid, as tested by the microscope. Subsequently it suppurated; the whole mass degenerated and came away, leaving a cavity which measured, with Simpson's uterine probe, 7½ inches in length. This abscess has not healed to the present time.

2. There were pain and dragging in the back over the sacrum. The os uteri was patent enough to admit the forefinger. Its edges were thickened, indurated, ragged, and ulcerated. The uterus itself seemed fixed and immovable. Pronounced, in consultation, by the elder Dr. Storer, of Boston, to be probably a cancerous affection.

3. Intense pain in the right hip-joint, with or without pressure. Pain in right knee-joint (subsequently there was fluctuation in same knee-joint). No shortening (subsequently there was shortening of one inch); absence of right natal furrow; inability to bring right knee to chin. On these symptoms this local disease was called morbus coxarius.

The other organs and functions seemed as sound as could be expected under the circumstances.

Without entering further into details, it is sufficient to state that as the patient became bedridden, it also became necessary to have a bed specially contrived for her use, to provide for her comfort, to give an opportunity for exercise, and to avoid a permanent bedridden condition. Her husband, a wealthy and influential merchant, was unable to find any bed that would suit. Being exceedingly interested in the case, and in this manner thrown on my own resources, I contrived the bed which is here described, and which answered admirably to the case; so admirably that I have ventured to bring it forward to notice, with the hope of benefiting some poor bedridden sufferers whose couches are beds of anguish.

The following principles were designed to be carried out:—

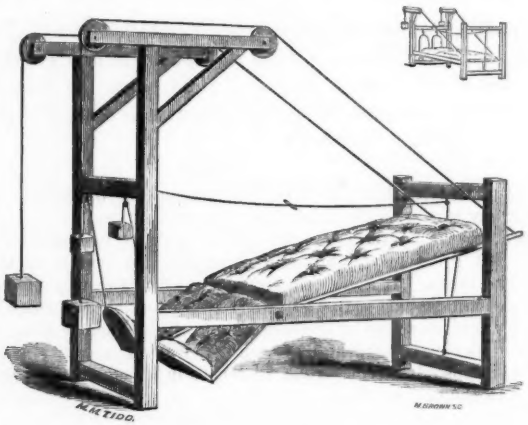
1. *Immobility* of left hip-joint.

2. *Mobility* of knee-joints, with leg exercise, so that the patient might derive the benefit of the use of some of her locomotive muscles.

3. A noiseless, easy, and quick adjustment, capable of being acted by the patient herself.

4. A contrivance to gradually bring the patient to a vertical position, so as to get her upon her feet.

How far these points were accomplished, the reader may judge. It should be remarked that the decubitus was dorsal, and *only* dorsal.



The bed consists of two head-posts 55 inches long, two foot-posts 87 inches long, connected by two rails 91 inches long and separated from each other 28 inches by four cross-bars. A frame of oak forms the bed. It is divided into three parts—one for the body and thigh, and two for the legs. These are connected together, and play upon an iron rod 28 inches in length and $\frac{3}{4}$ inch in diameter. The rod runs through the rails about 24 inches from the foot-post, and also through eyes of iron attached to the body and leg portions in this order: *first*, through an eye in one side of the body portion; *second*, through two eyes of the first leg portion; *third*, through two eyes of the second leg portion; *fourth*, through the remaining eye of the body portion. The body portion plays easily inside the frame of the bed, and is prevented from falling through to the floor at the head by stops of wood nailed on to the rails. These stops may be left out, and the head of the patient depressed below the dead level, an important therapeutical agency in uterine or intestinal hemorrhage.

The leg-rests are provided with foot-pieces, to which cords are attached which play over pulleys fixed in the upper connecting bars of the foot-posts,

and are counterbalanced by granite blocks weighing about 14 pounds each. These foot-pieces are mortised into the leg-rests at an angle of about 81 degrees, and are upholstered.

The tops of the foot-posts are fitted with horizontal bars 45 inches long, stayed with props, and provided at both ends with pulleys of wood 5 inches in diameter. Over these pulleys play two bed-cords, one end of each of which is fastened to the free extremity of the body portion of the bed, and the other end to blocks of granite, in this case weighing about 28 pounds each. A cord is attached to the middle of the free end of the body portion of the bed, runs through a pulley in the lower bar of the head portion and another pulley in the upper bar, and then is fastened to the upper bar of the foot-posts.

The bed is upholstered by ticking, covered with corn-husks and another layer of ticking. It is then overlaid with a hair mattress, which has three divisions, corresponding to the divisions of the bed. Two wooden buttons at the head are used to secure the bed in the horizontal position while the patient is getting off or on.

With this general description, the use of the bed is apparent. The patient is placed on the bed, and her weight accurately counterbalanced by the granite blocks. If leg exercise is desired, this is accomplished by pressing down the foot-pieces to the floor, if desired. If the patient is too weak, the exercise may be passive. By pulling on the cord attached to the foot-post upper bar, the body portion rises to any point desired; or by pulling on the cord in the other direction, the bed is depressed. In all these movements the foot-pieces follow the upper part, so that the plane of the bed is always in the same line, except when the leg-pieces are depressed by special intent.

It is easy to see how this apparatus conduced to the comfort of the patient. The change of the plane of inclination was a great relief to the tedium of lying in bed. The motions were noiseless. They were made by the patient thus securing arm and leg exercise. Practically, it was a great success; for the exercise induced so great an increase in the strength, and the gradual approximation of the bed in direction towards a vertical line accustomed the patient to an upright position, so that in about two months she was able to leave the bed and go on crutches.

Besides bedridden patients, it is thought that cases of fractured thighs and legs may be benefited by the use of this bed.

Accessory.—In case it is desired to make up the bed, the following provision is made: A frame 24 inches in width and 89 inches in length is attached by hinges by the side to the bed. The other side is supported by two legs attached by hinges, and capable of being folded up. The bed is buttoned down in a horizontal position, and the patient is slid sideways on to the temporary frame.

If required to move the patient into another apartment, the temporary

frame may then be unhinged by sliding, and the patient carried wherever it is necessary.

Remarks.—The width may be increased to that of an ordinary bed, without losing the principle.

The following table gives a list of admeasurements:—

Length of bed from outside of posts	89 inches.
Width " " " "	$32\frac{1}{2}$ "
Size of posts	$4 \times 3\frac{1}{2}$ "
Length of head-posts	$54\frac{3}{4}$ "
" " foot-posts	87 "
Size of rails	$3\frac{1}{2} \times 2\frac{3}{4}$ "
" connecting bars	$1 \times 2\frac{1}{2}$ "
" pulley bars overhead	$2\frac{1}{2} \times 1\frac{1}{2}$ "
Length of " "	45 "
Size of wooden pulleys	$5\frac{1}{2}$ inches diam., $\frac{1}{2}$ inch thick.
" iron "	1 inch diam.
" cords	common clothes-line.
Length of body and thigh portion	54 inches.
Width " " "	26 "
Thickness of frame of body and thigh portion	$1\frac{1}{4}$ "
Length of foot-pieces	19 "
Width "	$11\frac{1}{2}$ "
Length of joint-rod	32 "
Size of granite blocks for foot-pieces	$7 \times 7 \times 5$ "
Weight " " "	28 pounds.
Size of blocks on foot-pieces	$7 \times 4\frac{1}{2} \times 3\frac{1}{2}$ inches.
Weight " " "	14 pounds.
(These weights may vary with the size of patient.)	
Height of rails from floor	26 inches.
Fastening of rails	common bedscrews.

TRANSACTIONS OF SOCIETIES.

ART. XII.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1866. *June* 6. *Pyæmia.*—Dr. HAMILTON reported the following case: On Wednesday morning, Jan. 10, 1866, I was requested to visit W. S., aged 14 years, rather large, and of fine, healthy appearance. On inquiry, I learned that on the previous Saturday he was engaged nearly all the afternoon in skating; that he became very cold soon after going upon the ice, and so continued; that he had three or four rather hard falls, and returned, perfectly chilled, to his home. The subsequent morning, Sunday, the 7th, he began to complain of general soreness and aching, slight pain in the head, and alternate sensations of chilliness and fever. On the 8th, an eruption over the surface of the body was superadded to the symptoms of the previous day. On the morning of the 9th he felt much better; but in the afternoon he was worse, the fever and general malaise being a good deal increased, and during the night he complained of a very severe pain in the right groin.

When I first saw him on the morning of the 10th, he was confined to bed, and complaining of very severe pain in the groin and slight headache. Fever, not very active; the rash was still very distinct, and resembled precisely what is seen in scarlatina, though no other symptom of this disease was present; some indistinctness of speech was also noticed. The groin, on pressure, was very tender and slightly swollen, the swelling diffused, rather than circumscribed. On the 11th I learned that he had been quite delirious during a part of the night, and that certain spasmodic twitches, to which he had for the past five years been subject, had occurred since his illness more frequently than usual. These movements were confined chiefly, or exclusively, to the upper extremities, the head, and features of the face, and consisted in a sudden retraction of the head, distortion of the eyeballs, retraction of the corner of the mouth to one side, and elevation of the arms, violently extended, above the head. Medical treatment, directed to the upper part of the spinal cord, as the probable seat of this affection, had long ago been tried, without benefit; but, as his health and intelligence were good, no attention had latterly been given to it. The groin was rather more painful and swollen than the day before; rather more fever; rash disappearing, but several reddish blotches were noticed upon the right elbow. On Friday the pain in the groin was nearly gone, but the ankle of the left limb had suddenly become very painful, some swelling of the joint was noticed, and a large red, ovoid blotch occupied about two square inches of the skin nearly two inches above the external malleolus. There was a scab, just below the ankle, twice the size of that of a fully developed vaccine pustule, with matter beneath, caused by the pressure of a boot; speech more imper-

fect; delirium the previous night very great; efforts to leave the bed almost incessant; slight delirium during the day. On the 13th, 14th, and 15th the symptoms the same as on the 12th, but the pain near the ankle was more intense, and so much delirium that it was almost impossible to keep the patient in bed. On the 16th, rather less fever, less delirium during the night, not quite so much pain at the ankle, but rather more in the groin, with increased swelling, extending somewhat into the thigh; desire for food nearly gone. 17th and 18th, same condition as upon the previous day.

On the afternoon of the 19th a severe chill occurred, followed by great nervous irritation, high fever, and great general suffering. It may here be incidentally stated that mustard plasters, applied after the chill to the inside of the legs, produced at the time but a moderate degree of redness, which faded on the second day; and yet on the next Friday, just one week from the time of application, full vesication took place. 20th, high fever, very delirious, but at times answers quite well; increased difficulty of articulation. On the 21st a swelling was observed on the right elbow, where the blotches had previously been seen, and on examination of the left ankle the same thing was found to have occurred; the swellings in both places evidently contained fluid. A third swelling, similar in character, was discovered in the right iliac region, a few inches above the groin. A slight perspiration, the first seen, appeared upon the forehead, face, and neck. On the 24th a crackling of the knee-joints, on motion, was distinctly heard at some distance from the bed; great aversion to food.

From Jan. 25 to Feb. 3 his situation was somewhat similar to that of the few previous days; always more or less delirium, night and day; sweat confined to the head, and upper part of the trunk; an extraordinary crackling on movement of the knees, ankles, thighs, wrists, elbows, shoulder-joints, or neck, loud enough to be heard in any part of the room. Feb. 4, the skin over the swelling near the left ankle is becoming quite dark and mottled; the patient no longer draws up his legs, either from want of power or from fear of increasing his suffering; the right groin and thigh still swelling, and more painful; some complaint of the left groin, which is somewhat tender and slightly swollen; the abdomen is also slightly swollen, has in fact been so for some days past. 8th, the feet have during the past few days become œdematous; and on the 9th the urine was tested, and found to abound in urates. 10th, less swelling of the feet; patient has for two or three days and nights past sat in an arm-chair, resolutely refusing to be moved; cannot at present bear the slightest movement of either of his lower limbs. 11th, the swelling upon the right elbow broke, and discharged thick pus. 12th, swelling of the feet nearly gone; thigh still growing larger, with increasing pain; slight increase of appetite; in the afternoon fainted, apparently caused by suffering and the long-continued upright position; the crackling of the joints continues, but is not so audible. The 12th, 13th, and 14th showed no important changes. On the 15th the abscess near the left ankle broke, and discharged freely. On the 17th the abscess ceased discharging. Pulse is now becoming a good deal weaker and more frequent, and patient shows less muscular strength.

On the 19th it was evident that an immense abscess was forming in the right thigh. A swelling of considerable size was also discovered upon the right nates, not far from the anus, its surface much abraded and ulcerated;

and now, for the first time, a shortening of the left leg was noticed, and the foot inclined inwards in a manner that had not been observed before; no appetite, and flesh wasting rapidly; has consented, after much persuasion and threatening of the serious consequences to himself of a refusal, to be replaced upon his bed. On the 23d matter was found discharging from the swelling upon the nates, showing the existence of another abscess; right thigh enormously swollen, pain extreme.

On the 26th the abscess of the thigh broke, and discharged in a very short time some pints of matter. On the 3d of March a small swelling, similar to the others, was found upon the right wrist; the abscess upon the abdomen, circular in form and about three inches in diameter, seems disposed to flatten and shrink; debility rapidly increasing; much œdema of both limbs, from the groins to the toes. On the 10th the abdomen had become quite tympanitic, and the œdema greatly increased On the 14th, 15th, and 16th fever was very high, and on the 17th erysipelatous inflammation, commencing at the orifice of the abscess in the right thigh, spread with great rapidity downward to the knee, and upward beyond the groin to the distance of several inches upon the abdomen. On the 18th the inflamed surface became quite dark, simultaneously with collapse; and on the 19th death terminated the most painful attack of disease, duration considered, that it has been my lot to witness.

No autopsy was made, but, on examination, the left thigh was found to be dislocated at the hip-joint, the result, doubtless, of an abscess within the joint, destroying the ligamentous connections, although but little pain was at any time referred to this region.

We have preferred thus to relate the actual progress of this remarkable case, without embarrassing or unnecessarily extending the account by an intercurrent detail of treatment, which did, in fact, little more than afford partial relief to the excruciating and persistent suffering to which the patient was doomed. The case did not at first present any sufficient grounds for anticipating the scene of anguish and death that was at so remote a period to ensue. The primary symptoms were nothing more than we often see as the consequence of long-continued exposure to cold, and the pain in the groin, complained of at first, was thought to have been produced by strain of the part whilst skating, or perhaps at the time of falling upon the ice. The sudden and almost entire disappearance of the pain from the groin, and its equally sudden reappearance within twenty-four hours, at or near the left ankle, suggested the idea of rheumatism. When, however, the skin at the seat of pain was found to be already inflamed, and the scab, with its subjacent pus, was discovered below the ankle, doubts once more arose as to what might be the future course and issue of the attack. Again, the delirium was of extraordinary character and violence, and seemed to be in no just proportion with the other general symptoms or local affection, and this circumstance, taken in connection with the oft-recurring spasmodic movements to which he had so long been subject, tended still further to embarrass the diagnosis, by suggesting violent irritation or inflammation below the base of the brain as the most rational solution of some of the more prominent phenomena observed. The symptoms, in part, bore so strong a resemblance to what has been seen in some cases of cerebro-spinal meningitis, as at one time to lead to the suspicion that this might be the real malady, complicated with local phenomena occasioned in the manner before intimated. When, at length, it became evident

that deposits of pus existed beneath the swellings upon the right elbow and left ankle joints, we could no longer doubt the existence of pyæmia, complicated though it might be with a diverse pathological condition.

The treatment before the development of pyæmia was moderately antiphlogistic, yet supporting, and requires no detail. Subsequently the medication and alimentation were, so far as practicable, tonic and restorative, quinia and iron being the principal medicines employed for this purpose. Morphia had to be freely given, and was the chief agent in procuring some respite to the excruciating pains endured by the patient.

A question of much interest in this case is in reference to the cause of the pyæmia. Had the chilliness, fever, headache, and malaise of the first day of the attack their origin in a then-developing pyæmia? or was the latter subsequently engrafted upon a disturbed condition of the organism (produced by long exposure to cold), and had its origin in an accidental circumstance, such, for instance, as the purulent scab spoken of? or can such a change in the condition of the blood, from intense cold, arise, as, conjoined with bruises from falling, may have an agency, when occurring in an already disturbed state of the system, in engendering pyæmia?

Oct. 5. *Deformities after Disease of the Hip-joint.* (With five woodcuts.)—Dr. H. LENOX HODGE called the attention of the Fellows of the College to some cases of deformity after disease of the hip-joint, in the following remarks:—

The ordinary deformity in bad cases, especially when badly treated, or left to themselves, is familiar to all. We see every day such children moving, as best they may, upon crutches, with the body erect, but the affected limb drawn forward and upward, away from the ground; not only useless, but liable to various injuries from its prominent position. If such a limb be examined, it will be found small and wasted. The mobility at the ankle and knee is usually normal, while that at the hip-joint is partially or oftentimes totally lost. On the outer or inner part of the thigh, in the groin or in the sacral region, depressed scars will usually be seen, marking the location of old abscesses. If the interior of the joint be looked at after death, the bones of the pelvis and the femur may be found firmly united by bony union either at the acetabulum or some abnormal position; or else the cartilaginous surfaces merely roughened, and fibrous bands existing within or outside of the capsular ligament, and the muscles, on the front and inner part of the thigh, especially the sartorius, biceps, and adductors, strongly contracted; or at times the joint itself but slightly changed from its normal condition, and the position of the limb entirely due to the contraction of the muscles.

Sometimes not only one but both hips have gone through the same disease, and a similar deformity cripples both limbs. Now the child cannot stand erect, and only after much practice can balance himself in a squatting position. Crutches are of but little service to him; few of those thus deformed can learn to use them. In this plight they hide themselves in some dark corner, or learn to crawl about upon their hands and feet. A few, after much effort, acquire the power of walking slowly and awkwardly when aided by their hands placed on a chair which they push before them; or else by their hands placed upon their knees. If one limb be much shortened by displacement of the head of the femur, or if the thigh and leg have assumed some unusual position from long-continued habit, the compensating deformities in other parts

of the body are very varied, and the attitude of the child in standing, and the efforts at walking, strange and pitiable.

I have had photographed a few of such cases which have come under my observation at the Children's Hospital, and elsewhere.

CASE I. John Henry Bryant, aged 12 years. One day, while visiting a child with club-feet, I saw a bright face in an obscure corner of the room, and upon asking, Who is that? the mother replied, "It is another of my cripples: nothing can be done for him; he hates to be seen, and hides himself away during the day." When this child was only two or three years old, inflammation of the hip-joints had begun, and, passing through its stages in both hips, had left him thus deformed. A deep scar will be seen upon the outer part of the thigh; both thighs were in the same line, and at right angles to the body, in which position they were firmly fixed. The mobility at the knee and ankle-joints was greater than normal; and the muscles of the forearms, arms, shoulders, and chest, exceedingly developed. This resulted from his mode of standing and of walking. When he stood, he placed his hands upon his knees, so that his legs, arms, neck and head, were in a straight line, and represented his height. In this way he substituted his arms for his thighs and spine, and thus removed all his weight from the hip-joints. In this attitude he could slowly move across the room by raising himself on the balls of his feet, and then bringing one leg in advance of the other simply by the movement at the knee, as is shown in Fig. 1.

Fig. 1.

Fig. 2.

CASE II. William Arthur Johnson, aged 13 years. Scars and fistulous openings are seen upon the thigh and groin of the right limb. The left was perfectly sound, except that, owing to the peculiar position which he was so often forced to assume when he stood, there was great relaxation of the ligaments around the hip-joint, and great mobility there. The right hip-joint, however, was perfectly rigid, and the limb turned out

from the median line, the foot being extremely everted, and the thigh much drawn upward, so that it was at right angles to the body. When aided, he could stand erect upon the sound limb, and then the right foot would hang at about a line with his left knee, and the right knee, on a line with the pelvis, would project at the right side. This deformity resulted from his having been allowed, while in bed, during the long period of suppuration, to draw the thigh up, and let it fall upon its side. His position, when standing unassisted, was as seen in Fig. 2; the sound limb nearly vertical, and the body inclined to the right toward his deformed and everted limb, receiving support from the right arm, with the hand on the knee. He could thus, for a short distance, make some attempt at an awkward walk by swinging the deformed limb around in front of the other, thus causing him to face to the left; then carrying the sound limb forward, and then repeating the swinging movement.

CASE III. Charles Hancock, 7 years. In this case both hip-joints had lost all their mobility. The thighs were drawn up toward the body, and adducted so that the knees nearly touched each other. He could not stand alone, but with the aid of his hands resting on a chair, could hold himself in an erect position. Fig. 3 represents him in this position, and exhibits very well the concavity in the lumbar region of the spine, common to all such cases, and compensating, to a certain degree, for the angle which the thighs make with the body.

Fig. 3.

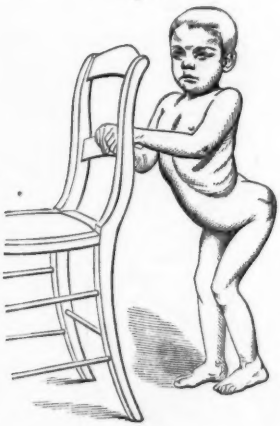
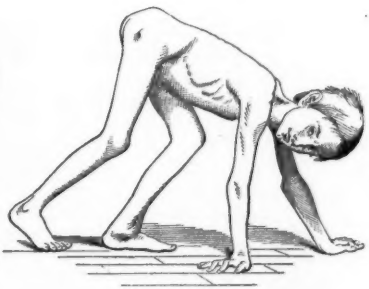


Fig. 4.

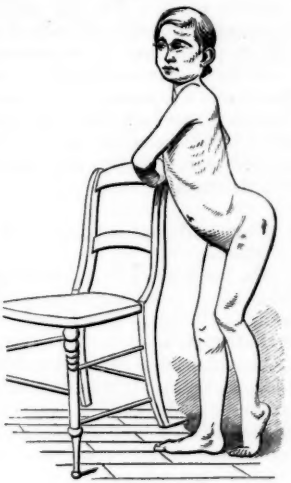


CASE IV. John Stitt, aged 12 years. With him some slight motion was still retained at both hips, but both had been long inflamed. His thighs were drawn up toward the body, and the deformity was very similar to that of Charles Hancock. Fig. 4 is of interest in showing how these poor children move from place to place; how they walk, or rather crawl. The spine, it will be noticed, is perfectly straight in this position. The curve above alluded to depends simply upon the position. The spine attains great flexibility, but does not become deformed.

CASE V. Samuel Ragan, 12 years. He had the right hip sound, but

the left hip deformed. As he stands (see Fig. 5), the concavity of the lumbar region, throwing the dorsal portion of the spine far in advance of the buttocks, exhibits the deformity, which is really due to the hip-joint. This curvature of the spine and pelvis enables him to bring the thigh nearly to the vertical line, and parallel to its fellow. The limb also is much shortened, as is seen by the knee being higher than that of the opposite side, and by his standing on the toes instead of the sole of that foot. In this way, not only did he stand, but also was able to make some movements as in walking.

Fig. 5.



The deformity in such cases as I have presented to you, increases with age. The limb, long held in an unnatural position, and seldom or never used, is slightly nourished, and soon ceases to grow with the rest of the body; the muscular tissues waste away, and lose their peculiar function of contracting at will. The fibrous bands formed around and within the hip-joint become tighter and stronger, and the member more and more useless. As the child becomes older, the sense of his helplessness and deformity wears upon his mind; nervous irritability embitters his life, and hastens the ill-health which is sure to follow close confinement in those whose constitutions have already been impaired by scrofula, or long-continued inflammation and suppuration.

At the Children's Hospital of this city, we are striving to rescue some of these poor deformed children from their forlorn condition. We find that when the deformity depends merely upon muscular contraction, and when it has not been of long continuance, it may be overcome by simple extension by means of a weight, which, after a time, may be substituted by some such splint as Davis'.

When the deformity has existed for a long time, even when purely muscular, it is advisable to etherize the patient; and as the muscles become relaxed, to straighten the limb, and then accustom it to this position by extension. But in many of these old cases, the long-continued contraction has caused a permanent shortening of the muscle. This shortening cannot be overcome by relaxation, and a subcutaneous division of muscular or fibrous tissues, myotomy or tenotomy, is advisable. When, in addition to the muscular contraction, there are fibrous adhesions within and around the hip-joints, these must be broken up by manipulation while the child is under the influence of ether. Any attempt to straighten such a limb by screws, or other mechanical appliances, simply tortures the child to no purpose.

By exercising our best care and judgment, and notwithstanding that many of our little patients have been weak and scrofulous, with an excitable nervous temperament, our operations have been uniformly successful, and the results have surprised and delighted the patients and their friends.

They are satisfied and pleased that the deformity is removed, while we hope and strive for something more. The limb ought again to become a useful member of the body. But in old cases it is very hard to teach the child to use it. Though perfectly free from pain, the muscles do not respond to the will, and all of them have lost much of their old activity. Their power can be regained only after repeated efforts. The child must be encouraged to try and try again. He must *learn* to walk. The process is a tedious one, and before it is completed some intercurrent disease may carry off these delicate little ones. In August last one of the most troublesome of our cases died of dysentery about eight months after his mother, with joy, had taken him home from the hospital free from his sad deformity.

Case of Monstrosity.—Dr. F. H. GETCHELL related the following case of this:—

On the 28th of May I was sent for to see Mrs. M——, æt. 19, who had been taken in labour, accompanied with some flooding. It was her first child. On my arrival I found the pains regular, and very severe; the os well dilated, and soft. The labour progressed slowly, but terminated without assistance in twenty hours after I first saw the patient, with the birth of a monster. It was born alive, but died in about half an hour. On examining the child I found that, besides having club-feet, and spina bifida, it had all the abdominal organs outside the abdomen, covered only by a thin serous membrane resembling the peritoneum. There was neither anus nor genital organs. I questioned the mother as to the cause of this strange deformity, but she could assign none; she expected to have given birth to a perfect child. She had felt the movements of the child up to a few hours before it was born.

Nov. 7.—Case of Leucinosis. (With three woodcuts.)—Dr. HORATIO C. WOOD related the following case:—

I was first called to see Mrs. N—— in the fall of 1865, on account of some trivial ailment. She was at that time unmarried. She was of medium height, and very robustly built, weighing about 130 pounds. She had a complexion of medium fairness, brown hair, and was, for a woman, very strong and muscular. She had been brought up in the country, having come to the city a few months previous. Her health was generally good, but she had evident signs of a scrofulous taint, such as enlarged lymphatics, but had never had, that I learned, any decided outbreaks of the diathesis. Her age was 20 years; her parents were Pennsylvania German.

On the 5th of June, 1866, I was again called to see Mrs. N., who was then in the second month of her pregnancy. I found her presenting no abnormal symptoms whatever, excepting constant vomiting, which occurred not only when she took food, drink, or medicine, but also every few minutes, even when her stomach had been long emptied. There was a great deal of nausea and violent retching. The functional activity of the kidney, liver, &c., was apparently perfect. The urine contained no albumen, but was not examined for urea. Various anti-emetics were administered without effect; but on the fourth day of the attack, a blister to the epigastrium, dressed with sulphate of morphia, afforded relief. As soon as sufficiently recovered the patient went to her father's in the country, where she remained for about three months. During this time, as her mother informed me, she was constantly troubled with vomiting,

and on one occasion was for four days unable to retain anything on her stomach. Her mother stated she threw up also very dark matters. During the whole period of her stay in the country, there was but one week in which she was able to go about freely.

On the 9th of October, 1866, I was summoned to see a little cousin of hers, in whom, in a short time, well pronounced symptoms both of scarlatina and diphtheria developed themselves. He had large diphtheritic deposits, not only on both fauces and tonsils, but also on the velum, and a general scarlatina eruption, which was followed by thorough desquamation. Although desperately ill for a time, he finally recovered. On going into his room one day, when the disease was at its height, I found Mrs. N. sitting by his bedside, where she indeed spent a great deal of time both before this and during the remainder of his illness. At this time she told me she still suffered daily with vomiting and general wretchedness, although she appeared perfectly well, not at all emaciated, and was in the best of spirits. Monday evening, October 22d (a little over two weeks from her first exposure), I was summoned to see Mrs. N., and found her in bed. Her skin was in all respects normal; her pulse about 80. According to her statement, her urine was normal both in quantity and quality; her only complaint was her constant vomiting. She had no headache, although she had had some little the day previous. She positively denied having had anything like a chill. She had vomited a good deal on Sunday, but was sufficiently well to spend the evening out. The substances rejected were all *ingesta*, with mucous and watery secretion.

Tuesday morning. No change; had had a bad night, vomiting constantly; everything taken into the stomach came up instantly. There was little or no nausea between the spells, which occurred from five to twenty minutes apart, and were accompanied with violent straining. Urine passed freely and without difficulty; not decidedly diminished in quantity; normal to the eye; was tested carefully for albumen, but contained none; was not tested for urea.

Wednesday morning. Had passed a bad night, with some little tendency to wander. No essential change in her condition. About eight o'clock the previous evening her friends had noticed dark matters in the fluid thrown up by her, and these had increased constantly. Bowels not open yet, the purgatives ordered having been rejected. The paroxysms of vomiting were as violent and frequent as ever, but now were accompanied with the rejection of large quantities of watery secretion, and a peculiar black fluid resembling, in physical characters, the black vomit of yellow fever, and depositing, on standing, large black flakes, which, under the microscope, were seen to be composed of dark amorphous matter, and numerous, variously altered, and crenulated red blood-corpuscles of the same tint as the amorphous portions. The amount of this fluid thrown up during Tuesday, Wednesday, and Friday, was very considerable; frequently it came up at intervals of five minutes, and at times more than half a pint was rejected at once. During the previous day all the various anti-emetics were tried without any effect. The following drugs were among the remedies: creasote, lime-water, calomel, oxalate of cerium, ipecacuanha, sulphuric acid, sulphate of morphia, opium suppositories, &c.

Thursday morning. The patient, during the night, had shown a great tendency to fall asleep immediately after the cessation of an attack of

vomiting, and now there was well-pronounced heaviness—amounting, indeed, to hebetude. An injection, administered the previous evening, had caused the passage of lightish, somewhat clay-coloured stools (according to her mother); conjunctiva icterode; skin scarcely perceptibly yellowish; normal as to temperature and moistness; tongue perfectly clean, not dry—perhaps a little large and flabby, otherwise normal. A 12-inch Chapman ice-bag was now applied to the spine, with its upper end at about the fifth cervical vertebra. It was tried faithfully through the entire day, a half hour on, and half hour off alternately; but without any sensible effect.

Noon. Pulse 120, not feeble; no tenderness was discoverable over any portion of the thorax or abdomen. On percussion over liver the amount and also intensity of the dulness was found to be abnormally small; the upper line of dulness anteriorly was about the sixth rib; it was almost impossible to make out the lower line, owing to the colon being much distended with flatus, and the pushing up of the intestines by the gravid uterus; the lower edge of the liver was, however, certainly up under the ribs. *Evening.* General condition the same. The blister on the epigastrium was ordered to be dressed with sulphate of morphia, and an injection of f℥iss of castor oil, and f℥ij of turpentine administered, which brought away (according to her mother) copious stools of nearly the *normal colour*, but *darker*. Some urine which I saw in the chamber was apparently thick with urates, but unfortunately I did not examine it save by inspection.

Friday morning. Marked jaundice; skin normal, save in colour; hebetude much more marked; vomiting more noisy, drier, with marked decrease in the amount of altered blood rejected. Amount of liver dulness certainly less than the previous day; no abdominal or thoracic tenderness; pulse the same; the patient's strength very good. Mercurial inunctions were resorted to, and a drop of croton oil was placed upon her tongue without effect.

Saturday morning, 1 *o'clock.* About an hour since patient had one or two convulsive seizures; at present, drowsiness excessive, passing into semi-unconsciousness, with great restlessness and gritting of the teeth. 2 *o'clock*, patient unconscious, with terrible spells of dry, noisy vomiting every few minutes, and constant tossings, which soon after passed into fits of screaming, when she would yell so loud that she could be heard in the street a square off, at the same time wildly throwing herself about the bed. At this time she evinced great muscular power, and was so sensitive that touching her excited her very much; it became necessary to fasten her in bed with a sheet. Pulse 130, not feeble; tongue moist, not furred; no heat or dryness of skin; urine very scanty, clear, no albumen, had to be drawn off with a catheter. At consultation[1] it was decided to put the patient under chloroform, and bring about abortion.

[1] On Wednesday evening the case appearing as though it were yellow atrophy of the liver, not being willing to assume the responsibility either of a prognosis or of the feared result, I requested a consultation; and the next morning met Dr. J. M. Da Costa by appointment. The diagnosis was made out as probable yellow atrophy, and a prognosis given in accordance. At the same time the possibility presented itself that the jaundice was secondary to, and caused by the vomiting, which, in turn, was the result of uterine irritation. It was this, with the patient's strength, which induced us to attempt premature labour. Of course, it was performed with the consent of the family, who were told distinctly that even it offered scarcely a ray of hope.

The patient, although unconscious, violently resisted the administration of the chloroform—screaming, tearing away the sponge with her hands, throwing herself around, &c., but readily came under its influence, becoming quiet and utterly passive in our hands, and ceasing to vomit. The effect of the anæsthetic went off in a little while, when the vomiting, fierce screaming, and restlessness all came back as before. Chloroform had at this time no influence on her pulse; ether seemed to strengthen it.

On examination with the finger, it was found that the neck of the uterus was almost entirely softened down, and the os was sufficiently open to admit the fore-finger, and allow a head presentation to be diagnosed. Tyler Smith's method of causing premature labour was employed. The cold and hot water douche alternately were faithfully applied for several hours, conjoined with frequent irritation of the os uteri by the finger. At six P. M. but little progress had been made; the os did not feel materially different, excepting that it was now sufficiently open to admit the tips of two fingers.

About this time the cord began to protrude; the pulsations in it were very strong, showing that the child was still alive; they ceased, however, before 10 o'clock. The patient was allowed to rest until 9 A. M., when no further progress having been made, a piece of sponge-tent was introduced into the os.

Condition of patient at 9 A. M. was as follows: Jaundice increased; skin not abnormally hot or cool, rather dry, approaching a lemon-yellow colour, with purplish blotches on the limbs. Pulse 130, tolerably strong. Unconsciousness complete, with every few minutes fierce screaming fits, in which she would hurl herself about the bed, raise herself into the sitting posture, throw her arms and even feet wildly around her, and apparently try to bite those restraining her, all the time yelling and screaming so that she could be heard a square off. Very little vomiting. Pupils dilated, answering sluggishly the stimulus of light. Dulness over the liver decreased, scarcely perceptible over a breadth of two inches.

12 P. M. Pulse 130, moderately strong. Screaming fits still more violent, with great restlessness, and gritting of the teeth in the interval. Os considerably dilated. A larger piece of sponge-tent was now introduced into the os, and soon worked its way up into the uterus. At this time I drew off some 10 f℥ of urine which had been secreted in about twelve hours. For chemical characters of this, see hereafter.

1 P. M. Labour-pains evidently commencing.

2 P. M. Pains stronger; vomiting ceased. Otherwise no change.

At 4 P. M., the head being well down in the pelvis, I applied the forceps, and, without any difficulty, delivered her of a very well-formed fœtus, which was not in the least jaundiced. The afterbirth came away immediately, the uterus contracted firmly, and no blood was lost.

5 P. M. The premature labour has apparently produced no effect; the great sensitiveness of the surface has not in the least abated, and the screaming fits are as fierce in proportion to the patient's strength as ever.

6 P. M. Mouth very dry, with sordes. Pulse 160, much more feeble. Breathing, about 36 per minute. Heart sounds feeble, approximating in character. Pupils, about as in the morning. Skin not markedly hot, dry, or cool. Patient's strength evidently failing, although no greater quietude. Shortly after this there was a sudden change for the worse;

the pulse ran up above 200, the skin grew cool, and the marks of approaching death became visible. There was no calm at the last, but life went out amidst wild groanings and stormy tossings, about 10½ P. M.

Desiring to have the urine examined by a thorough practical chemist, I submitted it to Prof. J. M. Maisch, of the Philadelphia College of Pharmacy. The following is his report :—

"*Colour*, deep brownish-yellow. Sp. gr., 10.20. *Reaction*, slightly acid. It was mixed with three times its bulk of absolute alcohol, whereby a dirty-white precipitate occurred: colour of the mixture, light wine yellow. The precipitate thus occasioned was dried; then boiled with a small quantity of water, and filtered while boiling hot. A deposit occurred on cooling, consisting of a white powder, which, when carefully heated, fuses somewhat, decomposes, and leaves charcoal, which is gradually consumed, leaving no residue. The deposit dissolves in a larger quantity of water, the solution yielding no precipitates with metallic salts. Evaporated with dilute nitric acid, no solid residue is left behind.

"This behaviour corresponds with that of *leucin*. Liebig's test to produce valerianic acid by fusing with hydrate of potassa could not be applied, owing to the small quantity of material. These reactions indicate likewise the *absence* of *Tyrosin*.

"The liquid left after separation of *leucin* by the boiling water, showed, by the usual tests, the presence of *sulphates* and small quantities of *phosphates*, but a total *absence* of *chlorides*. Slowly evaporated, the liquid left a crystalline mass consisting chiefly of *uric acid;* the edges of this crystalline mass consisted in part of thin prismatic crystals, apparently *leucin*. This crystalline residue was tested for *tyrosin*, without success, by the following methods: Scherer's test (with nitric acid and soda); Piria's test (production of sulpho-tyrosinic acid); and R. Hoffmann's test, as modified by L. Meyer (deuto-nitrate of mercury and nitrous acid).

"To sum up, the precipitate occasioned by alcohol in the urine contains: *Leucin*, *uric acid*, *sulphates*, and small quantities of *phosphates*.

"The alcoholic liquid separated from this precipitate was treated with subacetate of lead, the precipitate filtered off and washed with alcohol.

"The precipitate, which was of a light fawn-colour, was decomposed by sulphuric acid in the presence of alcohol, filtered, and the filtrate carefully evaporated: a deep brown mass remained behind, without any sign of crystallization. Tests were applied, with negative results, for biliary acids, biliary colouring matter, chlorides, sugar, and urea; but a small quantity of phosphoric acid was observed by the proper reagents. The precipitate occasioned by subacetate of lead in the urine, previously precipitated by absolute alcohol, therefore consists chiefly of *phosphoric acid*, *urinary extractive*, and *colouring matter*, in combination with lead.

"The filtrate from this precipitate was treated with sulphuric acid to remove the excess of lead added, and the filtrate from the sulphate of lead was carefully evaporated: a syrupy brown-coloured mass remained, in which no sign of crystallization could be observed; it was diluted with little water before the following tests were applied: With nitric and oxalic acids no indications of the presence of urea were obtained. With nitrate of silver a minute turbidity of *chloride* of silver was occasioned. Pettenkofer's test carefully applied, gave a faint but readily observable change of colour characteristic of the presence of a trace of *biliary acid*. Trommer's and Boettger's tests indicated the presence of a little *sugar*. The liquid remaining after the application of these tests was concentrated

and again tested for urea without avail. The filtrate from the precipitate occasioned by subacetate of lead in the urine, previously precipitated by absolute alcohol, contains *extractive*, *little sugar*, and traces of *biliary acid* and *chloride*, but no *urea*, which ought to have been contained in this portion of the material.

"In regard to the course of analysis pursued, I desire to state, that I carefully avoided, in all the different manipulations, *all* oxidizing and deoxidizing agents. The *total absence of urea* in that portion of the liquid where I had a right to look for it, was so unexpected to me that I devoted a portion of the urine, reserved in the beginning, to again test for it. It was evaporated with care, and tested in the usual way with all the necessary precautions, but it could not be found.

"I regret very much that the amount of this urine (scarcely one and a half fluidounces) was so small as to preclude the possibility of submitting larger quantities to processes for preparing some of the compounds tested for. I refer particularly to Tyrosin and biliary colouring matter. The former, if present at all, could be contained in the urine merely as a very minute trace, because none of the tests gave any indications of it in that portion of the separated constituents which ought to have contained the whole amount originally present in about six fluidrachms of the urine. Regarding the colouring matter of bile, its rapid decomposition in contact with air and during chemical manipulations, is sufficient to explain the negative results, particularly in view of the mere trace of biliary acid observed."

Perhaps it will be useful to sum up in a few words the history just given in full, and then to point out some peculiarities in the symptoms. A robust lady, twenty-one years old, near the end of the sixth month of her first pregnancy, during which she has suffered very much from severe, persistent vomiting, and has had one or two attacks threatening her life, is seized with symptoms precisely resembling those of her previous attacks; but instead of their yielding to treatment, they constantly become worse and worse, jaundice sets in on the third day, *without any fever or heat of skin*, percussion dulness over the liver lessens, symptoms of blood-poison appear, and she dies on the fifth day in a state of wild, unconscious delirium.

The general features of the case are those portrayed by Prof. Frerichs in his account of acute atrophy of the liver. None of the characteristic symptoms were wanting, excepting the deposition of a crystalline deposit of leucin and tyrosin in the urine; a chemical examination, however, of that fluid proved that leucin was largely present, though not in sufficient quantity to deposit spontaneously. Although the agreement was so complete as to identify fully the affection, yet there were some peculiar symptoms in the case which it is well to notice, to aid us in sifting out the diagnostic from the incidental symptoms of this disease.

There were no hemorrhages (except from the stomach) or petechiæ.

There were none of the peculiar oscillations of the pulse so universally observed by Prof. Frerichs.

There was no abdominal tenderness or pain.

Very few biliary products (acids or colouring matter in the urine), and tyrosin was, if present, only a trace, and there was not, at any time, a greenish sediment.

There was no headache, and not the slightest depression of spirits before or in the earlier portions of the attack.

The black vomit appeared before the jaundice, which in turn preceded all decided nervous symptoms.

Autopsy about fourteen hours after death.—Cadaver well formed; not at all emaciated; the breasts and limbs very well developed; a general bloodlessness of all the tissues very noticeable.

Thorax.—Heart rather large, its walls rather thick, with a slightly yellowish or buff-coloured tint; right ventricle containing a soft, illy-formed black clot; left ventricle without one. Muscular tissue, under the microscope, very much altered; the transverse striæ of the fibres generally having entirely disappeared, and the well-defined margins being lost. Occasionally a well-preserved fibre would offer itself, but almost the entire mass of the bundles were in an advanced stage of degeneration, presenting a granular, illy-defined structure, with innumerable small and large oil-globules through them, and longitudinal stria merely indicating the lines of separation of the primitive fibres. Under the action of acetic acid they became more transparent, and the vast number of oil-globules stood out in strong relief.

Fig. 1 represents the muscular tissue unaltered by reagents. Fig. 2 represents the shreds of tissue after the action of glacial acetic acid.

Fig. 1.

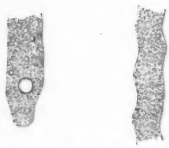


Fig. 2.

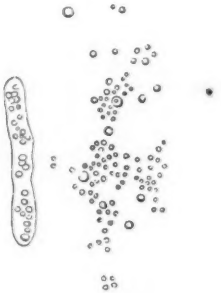
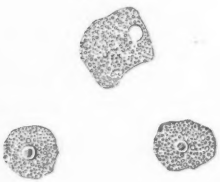


Fig. 3.



Lungs, to the eye, nearly normal; rather dry, presenting here and there patches of dark venous congestion, especially posteriorly, but mostly pinkish, everywhere crepitant. Not examined microscopically.

Blood obtained from the right ventricle, under microscope, presented nothing abnormal; when dried on a slide, no crystals were obtained.

Abdomen.—Liver remarkable for its excessive thinness, sharp edges, and its flabby texture. Very high up, its lower edge scarcely reaching to the ninth rib; of a yellowish colour, with a close, bright-red injection of the capillaries of the whole surface; on section, of a dull orange colour; no appearance of the lobules visible. Weight 2 lbs. 6½ oz. av.; circumference 29 inches; long diameter 10¼; greatest transverse diameter 7½; at the fissure, 6 inches; greatest thickness through right lobe, 1⅜ inches; thickness of left lobe 2 inches from the edge, half an inch.

Gall-bladder full of bile; cystic, hepatic, and common ducts all per-

fectly pervious, as was proven by dissecting them out, and passing a probe through them.

On microscopic examination scarcely a trace of cell structure could be found. On a number of slides examined I found but a single cell, and that in a very advanced state of degeneration. Everywhere were myriads of oil-globules of all sizes, with granular matter. No crystals of leucin or tyrosin could be found.

Spleen.—Weight 71 oz.; colour rather darker than normal. Tissue decidedly softened; very friable. When a little of the pulp was placed under the microscope, numerous cells, of various shapes and sizes, filled with granules and oil-globules, and indistinct elongated bodies containing numerous granules, probably the remains of the so-called "caudate corpuscles" of the spleen filled the field of vision.

Kidneys.—Length $5\frac{1}{4}$ inches; breadth (at centre, from inner edge of hilum) $2\frac{1}{2}$ inches; thickness $1\frac{3}{8}$ inches; weight of one 6 oz. av. On section, cortical substance with a decided light yellow tint; pyramids reddish, with longitudinal streaks of darker red. The pelves of both kidneys were filled with a milky fluid, which the microscope showed to be composed of innumerable large, pavement epithelium cells, in every stage of degeneration. These must have come from the mucous membrane of the pelves themselves, and possessed the general characters of such cells, but were filled with granular matter and large and small oil-globules. (See Fig. 3.)

On microscopical examination the secreting tubules were everywhere found to be gorged with oil-globules, great and small, to the very uttermost. The secreting tissue appeared to be entirely destroyed; large oil-drops, still retaining the shape of the original cell, were the only indications of the normal gland structure that I could find.

Supra-renal capsules rather larger and softer than natural, and of a very decided yellowish tint; not examined microscopically.

Peritoneum injected.

Stomach.—Mucous membrane thickened and softened; much injected, more especially on the larger curvature near the pylorus, where there were numerous small ecchymoses of the, apparently, same dark substance so plentiful in the matters rejected.

Duodenum.—Mucous membrane softened; otherwise normal to the naked eye.

Ovaries.—Normal in general appearance, as well as in their microscopic structure, one of them containing a very well pronounced *corpus luteum.*

Uterus.—Muscular tissue seen, under the microscope, to have undergone a similar change to that of the heart-structure, although not to so great an extent. There were some oil-globules and granular matter, with a marked loss of definiteness of outline.

Remarks.—In regard to the nature of the terrible disease under consideration a number of theories have been advanced, prominent among which have been those which assume a "bilious liquefaction"—a melting down of the tissue in an excess of bile in the blood of the portal vein (Rokitansky), or in the biliary ducts and liver cells (Hensch, Von Dusch). Such suppositions seem to me so monstrous—the idea of living cells melting away in their own secretion so opposed to all modern pathology—that one almost wonders that Professor Frerichs should pause to demolish them as he does.

There is one explanation of the disease, which, from the source of its origin, and especially from the credence which it has gained, challenges our serious attention. Dr. Bright, of London, was, I believe, the first to advance it (*Guy's Hospital Reports*, vol. i. pp. 624–632), and it has been more or less fully adopted by most of the modern writers (*Frerichs*, Erster Band, p. 257; *Wood*, vol. ii. p. 576; *Aitken*, vol. ii. p. 834; *Flint*, &c.). The theory alluded to is, that the structural change of the liver is caused by some form of inflammation. Before discussing this idea of the nature of yellow atrophy, it is worthy of remark that its author, Dr. Bright, failed to grasp the peculiar, characteristic features of the affection, as is shown by his grouping under one head cases of this disease and others which were essentially different. Thus his first two cases (*Guy's Hospital Reports*, vol. i.) were simple jaundice, as it is very commonly seen, probably arising from a catarrhal inflammation of the gall-ducts, or even from a want of functional activity of the liver-cells. His third case was the result of external violence, and seems to have been an inflammation of the peritoneum, and cellular and possibly glandular structure of the viscus. The fourth case was probably the hob-nailed liver. Certainly, as he himself states, there was some chronic disease of the organ, so that it is almost impossible to decide the part the acute disease played, or whether there was any acute disease different from the chronic affection. His fifteenth and sixteenth cases appear to have suffered from the so-called acute atrophy. In his seventh case the liver was full of small abscesses; in his own words there was a very general inflammation of the substance of the liver, connected with the presence of gall-stones. The eighth case was one of "extensive suppuration of the liver."[1] These eight cases, he then says, may be considered as forming a kind of series of what may be called inflammatory, or perhaps idiopathic jaundice; but, as just stated, they are instances of at least five essentially different diseases. Surely, this being so, we can throw off any weight of authority which may belong to the inflammatory theory, especially as the best of the modern writers accept it, as it were, under protest.

According to the best developed phase of the inflammatory theory, the affection has its origin in a diffused inflammation of the glandular structure of the liver. Let me quote the words of Frerichs, as translated by Dr. Murchison. He says (p. 229, Eng. translation): "This theory was first enunciated by Bright, who described cases of the disease under the appellation of hepatitis; in recent times, Engel, Wedl, and Bambuyer, have subscribed to it, and have explained the destruction of the cells by a fatty degeneration arising from an acute exudation process. Although I have some hesitation in identifying the destruction of the hepatic cells with fatty degeneration, still I cannot but adhere to this view in so far that, according to my experience, an exudation-process constitutes the starting-point of the disease. On close examination of a liver which is undergoing acute wasting, portions are found, mostly in the right lobe, in which the morbid process has not run its entire course. We here

[1] I have been thus detailed, not so much for the reason indicated in the text, as to illustrate the way in which this affection has been confounded with others by the older writers. All the observations made prior to the appearance of Frerichs' book are of but little avail, since it is rarely certain that the cases are really those of acute atrophy. In endeavouring to arrive at a true idea of the nature of the affection, it seems to me a vital point first to eliminate all doubtful cases; under which head I would class all in which there is not distinct notice of the presence of leucin or tyrosin in the urine or liver.

observe not merely a remarkably congested condition of the capillaries, but in the circumference of the lobules, broad, gray bands, consisting of finely granular matter with isolated cells undergoing disintegration, while the cells nearest to the central vein still continue normal, except that they are infiltrated with bile." Allowing this last observation to be strictly correct, is it proven that this gray matter is an exudation product? In the liver of the case herein described no opportunity was presented of confirming or disproving the faithfulness of the observation—all parts of the liver seemed equally destroyed. Yet on section the liver seemed to be largely composed of grayish granular matter, and I confess that the contents of the one or two cells seen by myself appeared to be identical with this external material. For this reason I would incline to consider that these broad gray bands were the *result* of the *cell disintegration* going on in their midst, not a primary exudation—the cause of the cell change. Be this as it may, allowing the first step of the morbid change to be an exudation process, it is no proof that the process is inflammatory. Is tubercular disease inflammatory? and is not an exudation the first local manifestation? Yet this is almost the only shadow of a proof of the truth of the inflammatory theory. It appears to me, therefore, that this hypothesis bears upon its very face the Scottish verdict of "*not proven;*" and more than this, I hope to adduce proof of its falsity.

In the first place *fever* is *not* one of the symptoms of the affection, although so stated in some of the recent text-books. Frerichs says (Eng. trans. p. 217): "Along with the colour, the skin was usually cool, dry, and inactive; in none of my own cases was any elevation of temperature observed. Alison and Bright likewise make particular mention of this circumstance."[1]

In the case herein described, one of the most striking features was the coolness of the skin, which was observed in *all stages* of the disease, and was accompanied, until the last few hours, with a moist, normal tongue, on which not an epithelial cell seemed ruffled; in a word, there was not a trace of a febrile movement, and this in a tolerably robust patient. May we not then set down as a character of the disease *absence* of fever? Now is it conceivable that if so large a gland as the liver was so intensely inflamed as to totally destroy it in four or five days, the system would not sympathize with it sufficiently for fever to be excited?

Secondly. Not only is fever wanting, but the peculiar local characteristics of inflammation are not present. We have not only no proof whatever, but there is no reason for supposing that there is any enlargement of the organ at any stage.

Even tenderness and pain are frequently wanting. The violent retching must of necessity cause some degree of soreness; yet, in Mrs. N. firm percussion over the liver produced no uneasy sensation whatever as long as she was conscious. Afterwards it was not tried, since touching the patient anywhere produced so much excitement that it would have been impossible to judge of the results.

The general and local symptoms differing thus *in toto* from those of inflammation, what shall we say as to the structural lesions found on *post-mortem* examination. Not only can we say with Prof. Wood, "The results of the disease are quite different from those exhibited in any other example of hepatic inflammation;" but also that they are totally unlike

[1] In very thin sections the yellowish colour was scarcely apparent.

those of acute inflammation in any organ whatever. Allowing, for argument's sake, that the change is a mere fatty degeneration, where do we have even fatty degeneration occurring as the result of an inflammation of a few days' standing? Further, is not the metamorphosis more than a mere fatty degeneration? Even Frerichs is forced to admit this. Is it not an organic change—*sui generis*? Blood loaded with leucin and tyrosin, a liver tissue studded with crystals of the same—surely these are not the accompaniments of a mere fatty degeneration. Prof. Wood (*Pract.*, vol. i. p. 124), in speaking of tubercle not being the result of inflammation, says: "But a sufficient refutation of this opinion is, that in a vast number of cases tubercles exist without any inflammation whatever, evinced either by the symptoms or by post-mortem anatomical examination." So I would sum up our past argument; shall we grant the proposition in the one case and not in the other?

But even stronger and more convincing is the fact that the liver is not the simple seat of the disease, and probably is neither sooner nor more terribly involved than other vital organs, but merely partakes of the prevailing dyscrasia.

Jaundice is one of the most prominent symptoms of the affection, and as it is generally connected with disease of the liver, the attention of observers has been attracted to that organ, where the terrible lesions found have riveted it, and caused them to overlook important lesions elsewhere; still almost every one has noticed that the kidneys were diseased. The German professor, alluding to these organs, says (Eng. trans. p. 227): "Besides the deposit of pigment dependent upon the jaundice, I have found the glandular epithelium infiltrated with granules, and in most cases in a state of fatty degeneration, and the tissue itself flabby and shrivelled." (*Das Gewebe schlaff und welk*, p. 235, Erst. Band.) He further states that they have not received the attention they deserve, which seems true of all the organs except the liver. One of the most significant symptoms of the disease is the absence of urea from the urine, which, with the presence of urea in the blood, is irrefragable proof of utterly perverted cell action in the kidneys. Is not the retention of urea in the blood fully as serious as the retention of the bile elements—concerning which Frerichs says: "I do not here refer to the presence of the constituents of the bile, of the harmlessness of which I have convinced myself by a long series of injection experiments." The symptoms of the last 48 hours of Mrs. N. were precisely those of uræmic poisoning: the restlessness, gritting of the teeth, wild convulsive tossings, fierce screams, and utter unconsciousness, were all in perfect agreement. The microscopical examination of the kidneys proved that in her case their glandular element was as completely destroyed as that of the liver; tubules completely stripped of secreting epithelium and everywhere gorged with oil and granules, marked the common wreck. Can it be said that this death of the cells, this complete degeneration of the secreting tissue, was caused by an effort to eliminate bile poison? It seems not. The case lasted but four or five days, and at no time did the urine contain biliary colouring matter in any amount. Is not the fact of the non-presence of the bile pigment in the urine when it was loading the blood, dyeing the tissues, and oppressing the nerve-centres, fair proof that the secreting cells were already altered; that the kidney lesion was at least consentaneous with that of the liver? It seems to me, in view of these facts, it would be as proper to call the disease acute atrophy of

the kidneys, or acute uræmia, as acute atrophy of the liver or acute jaundice.

I have no doubt the same change took place in the supra-renal capsules. Unfortunately, I did not at first suspect the universal alteration of cell-structure that prevailed, and these organs were not preserved for microscopic examination; but they had the peculiar appearance and softening of other organs. The mucous membrane of the pelvis of the kidneys was the only one whose epithelium was examined with the microscope. The cells were undergoing the characteristic change; they were gorged with granules and oil-globules of various sizes. The spleen tissue had not escaped; its cells were everywhere undergoing the same destructive metamorphosis; the so-called caudate corpuscle appeared to be almost entirely destroyed, or only represented by elongated formless masses of granules. Even the muscular tissue of the uterus had suffered. The heart-fibres were very far advanced in the same destruction. In short, not only were three of the most important glands destroyed, but pavement epithelium and striated muscular tissue were equally blasted. It might be argued that these were mere accidental changes in a single case. This has been answered for the kidneys. The patient was one of the last in whom a fatty heart might be looked for—young, robust, muscular. More than this, it seems evident that the same degeneration of heart-structure existed in Frerichs' cases. It is very evident from the text of his work that Professor Frerichs did not examine the heart-tissue with the microscope. In Mrs. N.'s case the heart was pronounced to be healthy, before the microscope revealed the change. Would it be an unfair inference, that if the German Professor had examined the heart-tissue, he would have found a similar degeneration? But we are not left to mere inference, for fortunately his acute observation noted abnormities which he failed to appreciate. In describing the appearance of the liver to the eye, his favourite expression is, "*schlaff und welk.*" It occurs over and over again, and is applied almost as freely to the heart-tissue. Thus, in the account of the autopsy, Obs. 14 (Erster Band, p. 210), occur the words *Das Herz schlaff und welk;* and a little further on, *Die Leber schlaff und welk.* In summing up the pathological changes of the disease (Erst. Band, p. 235), he gives as a constant lesion, "*die schlaffen, welken Bewesenheit des Herzmuskels.*" Taking these facts into consideration, it seems evident that in this disease there are consentaneous and identical structural changes in a vast number of important organs—changes, moreover, which are peculiar to the disease—totally different from those occurring in any other known affection. Is it conceivable that the links of this morbid chain should have been forged by one of their own number; that the starting-point of change so wide-spread should be a mere local disease, which in a day should involve almost every structure of the body. Can this be? It would seem not. Are we not forced to acknowledge that in the so-called yellow atrophy of the liver we have a constitutional affection of which the various structural changes are merely the local manifestations?

Considering this to be really the case, the question arises, what is the nature of the disease? Of the ultimate nature—the essence—of the various constitutional diseases we know little or nothing. All that is in our power to do, is to arrange them so as to obtain groups, the individual numbers of which are similar or in their nature identical with one another. Of all these groups the one which presents most evidently a defi-

nite idea outcropping amidst various conditions—which represents most closely a *genus* of naturalists—is the FEVERS. To this well-marked group it seems to me impossible to refer yellow atrophy.

In the first place, the most manifest and constant symptom of these diseases, that from which they derive their name—*i. e.*, *fever*—is wanting, in yellow atrophy. Secondly. All of the fevers evidently arise from the action of some specific poison derived from without, whilst in the history of the reported cases of acute atrophy there is nothing which can lead us to suspect a peculiar poison. This argument is, I am aware, not a very strong one, since so much obscurity still shrouds the origin of yellow atrophy, and yet it has seemed to me to have some force, for if there was a definite fever poison introduced into the blood from without, the disease has certainly been sufficiently studied for some of the laws of the development of the poison to be made out.

A third reason of some force is the non-contagiousness of the affection. The fourth and apparently decisive argument against the supposition that it is a fever, is derived from the fact that there is no constitutional symptom of any moment until after the destruction of gland tissue has gone so far that there is evidently blood poisoning from retention of effete substances. It is well known that in the various fevers we have evident symptoms of poisoned blood, long before the characteristic local lesions are fully developed. Thus, there are achings in the loins, back, and head, chills, fever, hot skin, dry tongue, generally perverted secretion, evident manifestations of a disturbed nervous system, and all the numerous symptoms which make up the whole of an ordinary fever; but in yellow atrophy of the liver all these are either totally wanting or else do not appear until after, and as an apparent consequence of the local disease.

If it be not a fever, what is it? It appears to me to be a member of that class of constitutional affections to which tuberculosis belongs—a rather illy defined group of affections characterized by the absence of fever and inflammation as necessary symptoms, and the magnitude of the local lesions. More in order to render my view of the pathology of this disease definite, to make any misunderstanding impossible, than with the idea that the name will not be superseded by a better one, I venture to propose to call it *Leucinosis*, since that substance is one of the chief products of the disease. If Professor Frerichs is right in his belief that the first step in the morbid local change is throwing out of a peculiar exudation, it will very strongly corroborate my view of the disease. If the possible explanation of the gray bands, given a few pages back, be found hereafter true, does it alter the case? Is it utterly disproven that even tubercle itself is the product of cell degeneration?

The only objection which occurs to my mind to the view advocated in this paper is the rapidity of the course of this affection. Granting that the disease really commences when it apparently does, if we take into consideration the number and importance of the organs concerned and the method of attack, is its course so very much more rapid than is seen in some cases of acute phthisis? In the latter affection only the lungs are attacked, and they are of such nature that immense alterations may and do take place in their structure without the suspension of their functions. In this disease, however, the organs are so attacked that their function almost immediately ceases in the part diseased, and that cessation means death.

And yet I cannot avoid here expressing a strong suspicion that the disease is not so rapid in its course as it appears; that in fact the local change goes on silently for some time before the final outburst, making a slow and sure headway—riddling the organs perhaps with disease, and yet leaving sufficient of their structure intact to prevent the induction of any very manifest symptoms until, having obtained a foothold, the local disease suddenly and rapidly increases, advancing, it may be, simultaneously from innumerable centres, and producing the characteristic symptoms of the affection. We all know how latent tubercle often is. The history of the case herein described lends sufficient probability to this surmise to make it worth while in similar cases to watch carefully for some decided proof one way or the other.

This much is certain, the patient had been vomiting constantly during her pregnancy to an extent rarely seen; that she had had two attacks closely simulating the earlier part of the fatal one, and according to her mother, in the second of these attacks (which occurred in the country), had thrown up black matters like those rejected in the fatal seizure, all these symptoms occurring without the urine being albuminous.

If ever I should meet with a similar case, I would certainly test quantatively the urine for urea, and would consider a *lessened excretion of urea* with a *non-albuminous* condition of the urine as very grave symptoms, and if *traces of tyrosin or leucin* could be found, it seems to me that almost positive proof of the commencement of the affection would be afforded.

Dr. DA COSTA said that he had listened with a great deal of interest to the remarks of Dr. Wood; and that the thoroughness with which the case had been investigated certainly rendered it a valuable addition to the literature of the subject. Yet there were some points that had been advocated which seemed to him to admit of a different explanation; and there were others which grew out of a consideration of the case, to which he begged to call the attention of the College. And in the first place it appeared to him that many instances of acute atrophy that had been reported could not be explained on the supposition of a diathesis. For instance, acute atrophy has been known to have ultimately followed obstruction of the bile ducts from cancerous deposits in the duodenum (as in Observation No. XIX. of Frerichs); or cirrhosis of the liver (as in Observation XXI., in which leucin was found in the blood and urine). It has, therefore, clearly been a sequel to cases in which the liver was already diseased, or at all events seriously interfered with in its functions. Again, what becomes of the examples of acute atrophy produced by mental emotion, such as have been described by Morgagni and others? To cite the case, so well known in medical literature, of Boerhaave, of an officer who receiving a blow was prevented by bystanders from obtaining revenge with his drawn sword, and who became jaundiced and died shortly with signs of the most marked cerebral disturbance. It is true that in some of the older cases the diagnosis of acute atrophy may be called into question. But among the most recent observers violent emotions are admitted as giving rise to the disease.

A view of the subject suggests itself that, while fully admitting the more general changes in tissue, which the case before the Society has so satisfactorily proven, yet does not set aside the primary difficulty as being

in the liver. It is to suppose that these changes in other organs are produced by the altered composition of the blood—altered by the products it retains—and the disordered nutrition thus caused, fostered perhaps by the disturbed condition of the nervous system. That these structural metamorphoses would have to occur very rapidly is not an argument against this view; for do we not find in diseases running as rapid a course, and in which the blood is greatly altered, extensive tissue alterations? We know, for instance, that in yellow fever the liver is yellow, and its secreting cells filled to the utmost with fat; that it has, in other words, undergone an acute fatty degeneration. This change, first pointed out by Dr. Clark, has been constantly noticed by the speaker; but he has also found it to be associated with a granular condition of the muscular fibres of the heart, and even of the minute structure of the kidneys.

And while referring to kindred changes in yellow fever, the great similarity of the phenomena of this malady to acute atrophy may be mentioned. Not only does this similarity show itself in the pathological state just mentioned, but in the accumulation of urea in the blood, in the colour of the skin, the character of the vomit, and of other symptoms, and in the rapid progress of the disease. We can thus understand how it has happened that epidemic jaundice of grave type, amid which cases of yellow atrophy have occurred, should have been considered as yellow fever, and even—as in the notice by Garnier-Leteurrie of the epidemic of jaundice in the French army of occupation in Rome, in 1849—be considered as identical in etiology.

There is, lastly, one more point which the consideration of the case before us suggests: that many of the symptoms, particularly the abnormal nervous symptoms, are in great part due to the non-elimination of the urea. And here, again, we find that the presence or absence of albumen in the urine has little or nothing to do with the question; and that in cases of suspected uræmia the urine must be specifically tested for urea without reference to whether or not it contains albumen. But to this point Dr. Da Costa stated that he had elsewhere called attention.

Paraplegia without Discoverable Lesion of the Brain or Spinal Cord.—Dr. ISAAC NORRIS read the following account of a case:—

The interest, as well as the remarkable results of the post-mortem, he stated, must be his excuse for drawing the attention of the College for a few moments to it.

The patient, aged 45, had been for some time Orderly Sergeant of Co. E, 26th Pa. Vols., and, for bravery in the field, had been promoted to the position of First Lieutenant of his company.

At the battle of Chancellorsville, he was wounded in the left side, the ball passing in above the hip. From the fact of the wound being often inflamed, and never ceasing entirely to give him trouble, it is questionable if the ball was removed, at least entirely. The patient was unable to give any definite information on the subject.

At the battle of Gettysburg, to which he hastened when it was known that his regiment was likely to be engaged, with the usual bravery of the American soldier, although still suffering from the effects of his wound, he was unfortunate enough again to be shot down, this time receiving the wound in his left leg. The limb must have been considerably shattered, for it was eventually necessary to amputate it about a month after the

injury, every attempt being made in the mean time to save it. Conservative surgery failing, it was amputated at the upper third at Little York Hospital, Dr. Snyder being the attending surgeon. After remaining there some months, he expressed a desire to go home, and was ordered to Philadelphia; he was sent by the Medical Director to Camac's Woods, where he remained, receiving the best care that the resources of a great city could command, until, the time of his regiment expiring, he was mustered out of the service. In process of time a limb was fitted to the stump, the result of a flap operation, and with practice he soon learned to walk on it, nearly as well as before the operation.

On the 19th of September, 1866, as he was returning home from receiving his pension, his wife first noticed some peculiarity in his gait, and the difficulty he experienced for a moment or two in walking, which would then go off, and remarked that some uncharitable persons not knowing the case, might think him intoxicated. This difficulty continued to increase, but he thought it was nothing, and would soon wear away. A carpenter by trade, he had given up the business since the war, and was employed at the gas works to superintend the meters; now walking from his residence, 21st and Locust, to the works at Market Street bridge, and back, daily. This he soon found quite a task, and, as he noticed each day that it became a more difficult one, he applied to me to give him, if possible, relief. Thinking the exercise beneficial, I did all I could to induce him to use the limb, and recommended also a douche of cold water, the reaction being very grateful to him. Rubefacient liniments were also applied and flannel worn next the skin. As tonics, quinia and iron were employed, as well as strychnia, this last being given not only by the stomach, but also endermically, and I thought with happy effect. The promptness with which it can be made to act renders this method a favourite one with the discriminating physician. Reading in a French author some years ago, of the beneficial effects derived from ergot in like cases, I was induced to try it here, but could not perceive any effects from it. Cantharides was also tried, but without any great benefit. The strychnia seemed to act best, and the patient was at first quite amused at the little twitchings and involuntary contractions of the muscles caused by it, especially in the amputated limb, showing that he was fully under the influence of the drug. A generous diet was also insisted upon.

Finding the trouble increasing, and that he was slowly losing the use of the limbs, a cane at this time being necessary whenever he attempted to walk, the battery was tried, and for a time with good effect. He soon got used to it, and it was then necessary greatly to increase its power to produce any effect. The lower extremities began now to be but appendages to the trunk, nearly all sensation and power having left them. That the trouble proceeded from the spine I think was proved by the irritability being so greatly diminished instead of increased, as one would have expected if the cerebrum had been involved, a distinction first pointed out by Dr. Marshall Hall. His memory also was excellent.

Being now unable to walk except with the aid of crutches, and there being some difficulty about the battery being applied daily, I recommended his seeking admission to the Pennsylvania Hospital, where he was received, and remained some weeks, his condition not improving. Becoming dissatisfied with his hospital life, and believing that his death was close at hand, he returned to his home, and again placed himself under my care. In the short time during which I had lost sight of him, he had become

very much worse, and I deemed it my duty to acquaint the family with the probable result of his case. At this time he was paralyzed as high up as the breast, the abdomen being much swollen and tympanitic. He swallowed anything with great difficulty, and a little wine and beef-tea was all I could get him to take. The pulse was very feeble, and he had considerable difficulty at times in articulation, which was evidently attended with pain. The memory, and his other faculties, I did not find impaired in the slightest degree during the disease. Entire loss of sensation now existed in the limbs and lower part of the trunk, the feces and urine coming away involuntarily. The catheter, however, had occasionally to be introduced. To add to his troubles, distressing bed-sores had made their appearance, and my great object was now not so much to prolong his life, as to alleviate his sufferings, the former having ceased to be desirable. Death took place Nov. 30th, or a little over two months after his attention was first drawn to his disease.

The patient believed that the amputated limb was entirely the cause of his trouble, and from the neuralgic pains he experienced in it from time to time, the supposition was a very natural one; but the first wound in the side may, after all, have been the real cause of the difficulty. As I have said, it never ceased to give him trouble.

Owing to a misunderstanding, I was not present at the post-mortem, which was performed by Dr. Hare, but from notes of the case taken by Dr. William Pepper, I am indebted for the following details:—

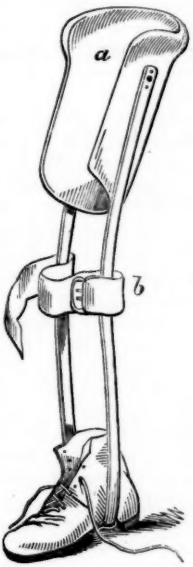
"Only the brain and spinal cord were examined, as it grew so dark that it was impossible to continue the work, and perfectly incredible as it seems to us in the light of former experience, there was absolutely no recognizable lesion of any part of the nervous system. The spinal plexus of veins was much congested, and in one or two places the cord itself seemed too full of blood and perhaps a little stained; but the membranes were clear and smooth, the vessels of the cord healthy, the nerve tubes normal, and the nerve cells in the gray matter of the cord especially healthy. The brain tissue was also healthy. Where then are we to seek for the cause of these cases? It may be that if we had been able to make a minute examination of the ganglia of the great sympathetic nerve, we should there have found some morbid alteration to account for these otherwise unaccountable phenomena."

Splint for Incipient Hip-Joint Disease.—Dr. PACKARD exhibited a splint employed by him in a case of this kind, in which it was highly desirable that the patient, a boy five years old, should move about, and at the same time that pressure should be taken off from the hip-joint.

The child, when first seen, was pale and somewhat emaciated, with great nocturnal restlessness; the limb was drawn up and much wasted. He had received several blows and falls upon the knee and hip. Extension by means of adhesive plaster, and a sand-bag attached to a cord playing over a pulley, was used, with general remedies, until the child improved very much, and became anxious to go about. The great irritability of the adductor muscles forbade the use of the ordinary forms of splints, with a perineal band. The splint represented in Fig. 5 was therefore made by Kimball & Co., 631 Arch Street. It consists of a trough or posterior socket of vulcanized rubber (*a*), on the rounded upper edge of which the tuber ischii and buttock may rest as on a chair. This is retained by a

lacing in front of the thigh (omitted in the drawing for the sake of clearness); and to it is fixed on either side, by a pivot, one end of a steel bar as light as possible to be strong enough to support the child's weight. The middle of this bar, rounded, is hinged beneath the sole of the shoe, and its two upper portions are slightly bent at the knee, so as to allow the child to sit down more conveniently. A double band (*b*) prevents the knee from coming forward too much.

Fig. 5.



When this apparatus is applied, the patient's weight is balanced on the upper rounded edge of the hard-rubber trough, and the acetabulum is entirely relieved of pressure. A little practice enables him to sit alone, as it were, with great ease and readiness. The heel is also brought down very efficiently.

Care must be taken to attach the upper ends of the bar to the hard-rubber trough at a point high enough up and far enough back, otherwise the latter will tend to rock backwards under the weight of the body, and the patient might even be in danger of having the thigh-bone broken by the pressure forward of the lower end of the trough.

The simplicity of this apparatus, its effect in taking pressure off the acetabulum, and in bringing down the heel, are the grounds upon which it is recommended to the profession for trial.

New Form of Vaginal Speculum.—Dr. GETCHELL exhibited a modification of a French instrument called Cusco's speculum. The original is a short bivalve with flat, wide blades coming together at the ends, and opening by short leaves that fold to the side and end when not in use. The theory of its operation is, that by distending the valves the vagina is taken up, thereby drawing the uterus near the vulva, which facilitates manipulation, and gives a much better view of the os than can be obtained through the cylindrical speculum, which pushes the uterus high up within the pelvis. It is also small, convenient to carry, and, be-being simple in its construction, not likely to get out of order. We found with the original instrument that in cases where the vagina was large and much relaxed, the valves when fully expanded failed to distend the vagina sufficiently to give a view of the os. The modification consists in simply lengthening the valves about one inch, which of course allows much greater distension of the vagina. We have used this instrument in quite a large number of cases, and always found it to work satisfactorily.

ART. XIII.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1866. *Sept.* 14. *Fibroid Thickening of Pyloric Half of Stomach, Peritoneal Ulcers*, etc.—Dr. S. W. MITCHELL exhibited the specimens, and read the following report:—

S. G——, æt. 65 years, cabinet-maker. Has had good health, excepting a brief attack of jaundice eight years ago.

About two years back he began to complain of nausea and of intense pain in the left side after eating, followed in a half hour by emesis. These symptoms were readily relieved at first, but returning again and again, were conquered with increasing difficulty.

Last fall I detected a tumour which lay across the belly, at the level of the seventh rib. It could be felt to move with the diaphragm, but could be caught during deep inspiration, and detained within the grasp of the hand; released, it slipped upwards, and sometimes could not then be felt. It altered the percussion note very little. As neither liver nor spleen was enlarged, the position and form of the mass led me to think it might be the pancreas, but fats were as easily digested as other food, and the swelling was rather more conspicuous than are pancreatic tumours in general. Although most of the signs pointed to the stomach, and hinted at cancer, some of the more remarkable of these symptoms, such as vomiting, ceased long before the case ended; and, moreover, the smooth sausage-like form of the mass was unlike that of gastric tumours.

During last winter, and up to death, Sept. 4, 1866, the patient rapidly lost flesh; diarrhœa began in March, and he continued to have three to six loose stools daily. His urine was scanty and high-coloured, but not otherwise peculiar. His appetite decreased during the spring, so that to eat became a daily task; but during the last two months he did not vomit at all. The pain was in the left side two years ago. During the last winter it was referred to the epigastrium, and was constant until death ensued.

In August, while I was absent, Dr. W. W. Keen saw Mr. G., and was unable to discover the tumour. On my return, I was surprised to find the same difficulty. It was due, as we discovered, at the cadaveric section to the scaphoid form of the belly; the absence of wind permitting the anterior abdominal wall to be drawn so tensely across the angle formed by the cartilages of the ribs, as to make it impossible to seize the mass, and even to prevent it from being pushed far down by the act of breathing.

Death from asthenia took place Sept. 4, at 5½ A. M.

Post-mortem.—Section by Dr. W. W. Keen, Sept. 5, at 12 M. Extreme emaciation. On dividing the skin, etc., we could not anywhere see a morsel of fat. No gas in the small intestines, which lay so entirely in the lumbar regions alone, that the division of the teguments brought the aorta into view at once. There was some gas in the colon. The peritoneum, both the free membrane, and that upon the intestines was dotted with ulcers, least frequent and whitest near the peritoneal attachments; red, dark, or black, and most numerous near to the intestines. In the recto-vesical fold was an ulcer covered with clots of blood. Size

two and a half inches long, half inch wide; edges ragged. The other ulcers varied in size as in tint, *i. e.*, from half a line to two lines in diameter. In many points they had healed, leaving a firm, white, central scar. They were present upon the gall-bladder in small numbers. Along the edges of the peritoneal folds, and hanging from the intestines, were watery yellow sacs, of small size, two to eight lines long, looking like the peritoneal pouches, empty of their usual fatty tissues. From the intestines also hung in numerous places what seemed to be projecting enlargements of veins. In some cases these were a line to two lines broad, and looked like hæmorrhoids. Liver, colour healthy; tissue normal; length eight inches, breadth five inches; gall-bladder half full of thin yellow bile. This sac projected an inch over the edge of the liver, a finger-shaped prolongation.

Below the liver, covered entirely by the transverse colon, was the stomach. It was composed of two parts; one, the pyloric, was hard and round, five and three-quarter inches long, and at one inch from pylorus, one inch and a quarter in diameter. It kept this size over four inches of its length from right to left, then grew a little wider, and finally formed a pouch, which was the cardiac end of the organ. It was here two and a half inches wide, and the walls were, as usual, soft and mobile. As they approached the pylorus they thickened, until they left a narrow passage through the length of the firm cylinder of tissue which ended at the duodenum.

There were no ulcers in the mucous coat of the intestines. One large ulcer at the beginning of the thickened part of the stomach, congestion, and even old inflammation all the way down the canal. Spleen and pancreas normal. Entire absence of fat around kidneys, which otherwise were healthy. Lungs adherent at top and upper third of right lung; no tubercle at apex. Lungs dotted on pleura and inside with little hard, white bodies, like small shot. (See *Microscopic Examination.*)

Heart small, and looks œdematous throughout. At the line of union of right auricle and ventricle there was a bulging sac full of gelatinoid fluid surrounded by smaller ones much like it in appearance. The largest was an inch long. Also, from the right auricle down to the apex along the right cardiac border, we found a line of similar bodies. These seemed to me to be pericardial doublings which had once held fat, but now were only half filled by water and loose connective tissue, with a minimum of adipose material.

Simple as this explanation may seem, the appearance presented by these bodies was altogether new to me; but I should add that I never before saw so absolute a loss of all the fatty tissues. There were about two ounces of fluid in the pericardium, a little less in the left pleura, and none in the belly.

One of the most curious points in this case was the finding a small particle of fat and of a small concretion, both lying free in the peritoneal cavity. The stone lay to the right, immediately internal to the external iliac artery. It has externally an organic layer, and within is hard. Dr. Bridges states that it is composed chiefly of phosphate of lime.

The following is the result of the microscopical examination made by Dr. W. W. Keen:—

I. *Stomach.*—The cardiac extremity of the walls of the stomach was somewhat thicker than usual. A section showed the glands considerably enlarged.

The pyloric extremity was about three or four times the normal thick-

ness. A section here gave a large amount of fibrous stroma, arranged in oval and circular meshes. In these meshes were masses of nuclei and cells. The latter were nearly all fragmentary. Their walls were generally indistinct, their forms mostly rounded, or if angular, it was apparently by reciprocal pressure. Some few were nucleolated. The nuclei were mostly oval, rather large, granular, and in some cases nucleolated. They were more numerous than the cells.

II. *Heart.*—The apparently gelatinoid cysts showed (1), some connective tissue, with here and there an elastic fibre; (2), a large number of fat globules, and (3), abundant granular matter and fragments of cells. The connective tissue had no definite arrangement, nor did it contain within it the fatty and granular matters.

III. *Peritoneal Ulcers.*—They showed simply connective tissue with pigment in large quantities, and granular debris.

IV. *Lungs.*—The little, round, hard, shot-like bodies were made up of an outside circular ring of connective tissue with a large deposit of pigment in it. The contents of this ring of connective tissue were hard, gritty, friable, did not effervesce on the addition of hydrochloric, nitric, or acetic acid, nor was it soluble in these acids. Its character was not determined, but it was probably degenerated tubercle.

Sept. 26. *Fracture of Cervical Vertebræ, with Anterior Dislocation and Compression of Spinal Cord; Death in Twenty-Four Hours.*—Dr. WILLIAM PEPPER exhibited the specimen and read the following:—

Mary Nicholson, æt. 19, Irish, a large, heavily-built girl, was admitted to Pennsylvania Hospital at 4 P. M., July 5, 1866. The day previously, at about the same hour, she fell from a small pie-cherry tree, certainly not more than fifteen feet in height, so that in all probability her fall did not exceed ten feet. She fell into a cornfield, but it is uncertain upon what part of her body she alighted. From the time of this fall she has been unable to move either hands or feet.

Upon admission she was perfectly rational, and gave a clear account of her injury. Her voice, however, was feeble, and frequently interrupted. The pulse was small and frequent: respirations were 32 in minute, entirely diaphragmatic. Sensation was entirely lost from a little below the clavicle downwards, though in the subclavicular regions she was conscious of the contact when a pin was pushed deeply into the derm. All power of motion of the extremities and muscles of the trunk was gone. The bladder was paralyzed and much distended, as no urine had been passed since receipt of the injury. No discharge of feces had occurred. The tongue could be protruded at will, and moved in any direction. The expression of the face indicated great respiratory oppression, rather than acute suffering. The pupils were about normal; the cheeks brightly flushed and very hot. The whole surface of the body was of much higher temperature than normal—a thermometer in the left axilla showing 108.5° at instant of death.

The above observations were made quickly, as she gave me the history of her accident; and while she was speaking in a sufficiently clear, though interrupted voice, she abruptly asked to be raised in the bed: her breathing became gulping and imperfect, and in less than two minutes she fell back dead. The pulse continued perceptible at the wrist during the greater part of one minute; and the cardiac sounds were audible for between three and four minutes after the last respiration, becoming gradually slower, weaker,

and more muffled and confused. Death thus occurred 24½ hours after injury.

Post-mortem twenty hours after death.—The brain was not examined. The body was large and very fat. The lungs were deeply congested. The heart contained a large quantity of blood mixed with clots, both dark and whitish firm ones. Abdominal viscera healthy. Intestines contained an immense number of cherry-stones.

Spinal column.—The tissues surrounding the cervical vertebræ posteriorly were ecchymosed, and infiltrated with bloody serum. No blood had escaped anteriorly into pharynx. Upon removing the cervical portion of the column, the fourth vertebra was found to be luxated anteriorly, owing to fracture of one of the articulating processes, so as to encroach considerably upon the spinal canal. In addition to this there was a comminuted fracture of the atlas, the lateral masses being separated and the arches broken in two places. There was not, however, any considerable laceration or compression of the spinal cord at this portion.

A brief review of this case suggests the following points of interest:—

1. The extreme degree of comminution of the atlas, without serious injury of spinal cord at corresponding point.
2. The simultaneous production of fracture, with anterior luxation of the fourth cervical vertebra—the paralytic symptoms being due to the injury of spinal cord at the seat of this lower injury.
3. The congestion of the face and the extreme elevation of the temperature of the surface.
4. The persistence of the cardiac contractions after the cessation of respiration.
5. The sudden death, undoubtedly caused by the movements of the patient displacing some of the fragments of the fractured atlas and producing compression of the upper portion of the spinal cord.

Oct. 24. *Fibroid Tumour of Uterus.*—Dr. WILLIAM PEPPER exhibited the specimen and read the following:—

The patient was of the higher classes of society, unmarried, aged about 46, of spare habit, but had enjoyed good health until twelve years ago.

The case has been under the care of Dr. Levick, to whose courtesy I owe the opportunity of examining and describing the specimen.

At that time—twelve years ago—she first evinced symptoms of uterine derangement, had excessive hemorrhages, and, upon a vaginal examination being made, the diagnosis was formed of uterine polypus, and an unsuccessful effort made to reach it with a double canula and ligature. The morbid growth has developed more or less rapidly from that time, producing most serious symptoms. For the first seven years she suffered with profuse hemorrhage, recurring at every menstrual period, at times so exhausting and prolonged as to threaten a fatal result. For the past five years this has moderated, and she menstruated regularly up to age of 43 or 44, when her courses ceased, apparently from natural causes. The most marked symptoms during this time have been difficulty in voiding urine, occasionally requiring the introduction of a catheter; severe pain in the pelvic cavity extending down limbs; œdema of lower extremities, more extensive on right side than on left; constipation, never excessive, being always relieved by mild laxatives; and occasionally dyspnœa and palpitation of heart.

There is a strong scrofulous taint in the family, but the patient has never evinced any tendency to tuberculosis.

About six weeks before her death, which occurred October 21, 1866, she noticed a small hard mass projecting from her vagina—horribly fetid, and discharging a thick sanious offensive matter. This mass increased in size, until it formed a horn-like projection from the vulvæ, two inches in length and almost an inch in thickness at its extremity.

The abdominal enlargement, which was as great as at the eighth month of pregnancy, underwent no diminution during this time.

Until a few days before her death she was able to move about the house, but then sank somewhat rapidly, and without manifest cause.

Post-mortem twenty-four hours after death.—Body emaciated. Brain and spinal cord not examined.

The lungs were anæmic, but healthy.

The heart was large, flabby, and slightly dilated: distended with dark, soft clots, and dark blood. There was no valvular disease.

The liver was somewhat enlarged and firm from chronic congestion, and presented, on the anterior part of the right lobe, a sulcus four inches long and one-third inch in depth, where the peritoneal investment of the organ was thickened and whitish. The apparent cause of this had been the great upward pressure which the uterine tumour had exerted upon the abdominal viscera, forcing the anterior edge of the congested liver against the edge of the ribs.

The base of the thorax was expanded, the lower ribs being thin, and their cartilages firmly ossified and quite brittle.

The spleen was enlarged to double its normal size: its tissue was firm and reddish.

The kidneys were somewhat flabby, and presented dilatation of their pelves, with some thinning out of their secreting structure.

The small intestines were forced upward under the arch of the diaphragm, and posteriorly into the lumbar regions; their calibre was small, and in places packed with hard scybalous feces, which, during life, had communicated a feeling of bosselation upon palpation.

Before opening the abdomen, it gave the impression of containing a uterus developed to the full term of pregnancy The tumour could be distinctly traced through the parietes; its outline was ovoidal, its surface smooth and uniformly firm, elastic, and non-fluctuating. The superficial veins of the abdomen were unusually prominent. The part of the mass which projected from the vulva was evidently in an advanced gangrenous state, and extremely offensive.

Upon laying open the abdomen, the tumour was found to be strongly adherent to its anterior parietes, to the iliac fossæ, and posteriorly to the tissues along the spine.

The mass—which was evidently the enlarged uterus—rose up out of the pelvic cavity, extending almost to the ensiform cartilage, and displacing the abdominal viscera. The urinary bladder was tightly adherent to the lower part of its anterior surface, and was so drawn upward and bent forward and compressed against the pubis as to greatly constrict its lower portion. A single fold of small intestine was moderately adherent to the fundus of the tumour.

The ovaries were attached to the sides of the enlarged uterus, were of normal size, and marked with cicatrices from the escape of ova, and were

in their normal relation with the Fallopian tubes, which appeared patulous and in every way healthy.

A large coil of distended vessels—branches of the internal iliac trunks—traversed the fundus of the uterus under the peritoneal coat, having entered the broad ligaments. The surface of the uterus also presented a fine network of quite large vessels.

The lower part of the tumour filled the pelvic cavity; more completely, however, on the right side, so as to produce greater pressure upon the vessels and nerves of that side, whilst the rectum was only moderately compressed.

The uterine cavity was laid open by a longitudinal incision through the anterior wall. The disease consisted in an enormous fibroid growth in the anterior wall, which appeared to have originated in the layer of muscular tissue adjoining the mucous membrane, and to have preserved the same relations during its development, so that the entire mass formed an ovoidal tumour in the anterior wall, preserving its mucous lining internally, and distending the external layer of muscular tissue of the anterior wall till it formed a thin capsule. The tumour had then developed downward, and had finally involved the cervix and grown into the vagina, still preserving the same relations to the uterine walls, so that the external layer was still stretched over it, and internally the mucous membrane of the anterior lip could be traced on the right side.

On the left side of the mass, it had advanced further into the vagina, even projecting, as before said, several inches from the vulvæ; and the gangrenous ulceration which was noted during life in the projecting part had extended up to the cervix uteri, destroying part of the mucous membrane lining the cervix, and any adhesions which might have been formed with the left side of the vagina.

On the right side, however, the mass was strongly adherent to the vagina about three-fourths of an inch below the cervix. The posterior wall of the uterus was much hypertrophied, and of distinctly muscular appearance; the cavity of the uterus was necessarily much enlarged.

The posterior lip of the uterus could be readily seen as a ridge separating the enlarged cavity of the cervix from the distended vagina.

The weight of the mass was about 20 pounds.

The measurements of the tumour and other parts of the uterus are subjoined:—

Circumference of uterus laterally	27½ inches.
" " longitudinally	36 "
Length from fundus to tip of projecting part	16 "
Length of projecting part—from cervix	6½ "
Thickness of anterior wall—through mass of tumour	9½ "
" posterior wall near fundus	1 inch.
Length of uterine cavity—from posterior lip to fundus	7½ inches.
Width of uterine cavity	5½ "
" venous sinus in body of tumour	⅓ inch.

The consistence and colour of the tumour varied; in the upper part it was very dense, hard, and elastic, and of a dull whitish colour, while in the lower part, which had occupied the pelvic cavity, it was much softer and more doughy, and was much discoloured, presenting patches of dark reddish-brown or black. Numerous large vessels, exactly resembling the sinuses of the impregnated uterus, traversed the mass: most of them contained firm, reddish coagula. The microscopic examination strongly favoured the view that it was in great part a homologous rather than a heterologous growth. There was very little fibrous tissue present in any of the numerous

fields examined; but the bulk of the mass was composed of fusiform cells with single elongated nuclei, with numerous granular nucleated corpuscles and some larger nucleated cells interspersed through the tissue, or aggregated in loculi formed by the fusiform cells. These latter cells were wholly undistinguishable from partially developed uterine muscular fibre cells. Examination of the posterior wall of the uterus, which was reddish and evidently had developed into muscular tissue, showed exactly similar cells to those observed in the growth in the anterior wall.

In addition to these elements, there were abundant crystals of hæmatin, especially in the discoloured parts; and throughout the whole mass, numerous fragments of crystalline matter, probably phosphate of lime mixed with the ammoniaco-magnesian phosphate.

The mucous membrane of the cavity of the uterus was smooth in some places, but in others appeared excoriated and discoloured. The external layer of the anterior wall which, as has been said, was stretched over the growth so as to form a capsule, contained a considerable amount of fibrous tissue mixed with a few fusiform muscular fibre cells.

This case of morbid growth of the uterus presents numerous features of interest. The original starting-point of the growth appears to have been in the muscular layer adjoining the mucous membrane of the uterus; and yet its mode of development—retaining the same relations to the tissues—forms a marked exception to the rule, that the nearer the fibroid growth takes its origin to the mucous membrane, the greater is the tendency for it to protrude into the uterine cavity and finally to become pendulous and pediculated. This tumour also presented the peculiarities, so rare in growths of this nature, of being exclusively seated in the anterior wall, of involving the cervix and projecting into the vagina, and finally of having acquired strong adhesions with the vagina.

In regard to the gangrene of the inferior part of the mass, no more plausible suggestion offers itself than that this portion had been strangulated by compression against the bony outlet of the pelvis.

As to the essential nature of this growth, there seems little room for doubt. The clinical history of the case, the slowness of its development, the absence of hereditary predisposition, and the long retention of the general health, argue against the idea of its malignant nature, no less than do the anatomical characters, the regularity of outline, the healthy state of the ovaries and surrounding viscera, and finally the microscopic characters. And it is in accordance with the very positive evidence afforded by microscopic examination, that we are disposed to class this tumour with those alluded to by Vogel and by Jones and Sieveking, but most elaborately described by Bristowe[1]—which consist of tissue homologous with the structure of the uterus, and are in fact muscular growths of the walls of that organ.

Sept. 26. *Hepatic Abscess following Chronic Dysentery.*—Dr. HERBERT read the following history:—

Michael Hagan, born in Ireland, aged 27 years, was admitted into the Pennsylvania Hospital on Monday, July 2, 1866. He was a sailor on a schooner which ascended the Cape Fear River, North Carolina, for a load of shingles, which she brought to Wilmington N. C.; she then started for Philadelphia about the middle of last May. As they were coming up, a storm forced them to lie over at Fortress Monroe for three

[1] Proc. Path. Soc. London, 1853, vol. iv. p. 9.

or four days, when they again started for Delaware Bay, being three or four days coming up. On the night after leaving Fortress Monroe, Michael Hagan slept on deck, without clothes. He awoke next morning with pains all through him, and was in such agony that he rolled from one side of the deck to the other; he suffered pain particularly in the right side, extending from the nipple to below the ribs, also great pain in the back and legs. He was landed at Lewes, at the mouth of the Delaware, whence he immediately came to the city in a steamboat. He remained sick four or five weeks with his friends, and then came to the hospital. When he entered, he was exceedingly pale, the whole surface of the body presenting very much the waxy appearance we notice in the lower extremities in cases of Bright's disease of the kidneys; lips and tongue were almost white; scleroticæ pearly. The expression of the face was very dull and heavy, and his intellect so very dull that we could obtain only the above history little by little, after many queries. There was no emaciation, but the body was round, the muscles soft and flabby. There was no pain, but great lassitude and a feeling of great weakness; no appetite; profuse sweating both night and day, with a cool, sticky skin; a great tendency to sleep both day and night, and very feeble pulse. He was, indeed, exceedingly weak. There was no abnormal tenderness, dulness, or distension of the abdomen; no enlargement of liver or spleen, but complete dulness over right thorax, and total absence of respiratory sounds except at the apex and the root of right lung; left lung was normal. Heart-sounds faint, but without murmur. Passes about normal quantity of urine daily, which is pale, clear, with slight whitish deposit; sp. gr. varying from 1004 to 1008; chlorides abundant; no albumen, and not phosphatic; urine was not examined under microscope. At this time there was no œdema, though he said his legs had been swollen; nor was there any diarrhœa, though he had had a little—could not make out when, but think he said he had dysentery last summer.

He was placed upon the best diet, with twenty-four fluidounces of beef-essence and eight fluidounces of wine-whey daily. Prescribed tinc. ferri chloridi, and, believing there was a malarial complication, the sulphate of quinia was given.

July 4. Continues to lie upon his left side. Respiration is quiet and easy, pulse weak, and no appetite. The hydrothorax continues; sweats profusely; complains of weakness, but not of pain; sleeps well. No apparent change since admission.

6*th*. The only change apparent is slight emaciation, though he eats well, but without appetite. For last two days bowels have been rather loose, moved about four or five times in twenty-four hours; stools varying in consistence from that of Indian-mush to thick gruel, and are of a blackish or greenish yellow colour, probably due to the iron he is taking. Stools contain no blood, but some mucus.

8*th*. Emaciation is becoming more and more apparent. Still has the waxy hue of skin, but is not the least jaundiced. No diarrhœa since last note; did not find it necessary to give him anything for his bowels. The condition of chest remains the same; still the extensive dulness and the almost total want of respiration. Is still very weak, and still sweats profusely.

10*th*. The treatment is to-day changed from the tincture of the chloride of iron to pil. ferri carb. To-day, I think, for the first time, was noticed some swelling of the legs, with pitting upon pressure; also the slightest puffiness of the eyelids. Emaciation progresses, and though he has a little

better colour in his lips, he nevertheless does not gain in strength. Urine does not contain the slightest trace of albumen; sp. gr. still very low.

20*th*. Upon examining the chest, find there has been no absorption of the fluid in right pleural sac; there is still the same extent of dulness and same absence of respiration. Heart-sounds are but faintly heard, but there is no murmur. Patient says he suffers no pain. Continues to be very dull, to sleep most of the time, and to sweat profusely. Is very much emaciated. Eyelids and feet very œdematous; appetite poorer; bowels were loose yesterday, but not so to-day. Treatment continued.

27*th*. Treatment to-day changed by giving the liq. ferri peracetatis in addition to the pill containing iron and quinia. Patient is gradually sinking.

30*th*. Seems a little brighter to-day; except this, can note no change.

Aug. 2, 9 A. M. Find him this morning lying on his left side, with his knees drawn up, suffering great pain in abdomen, which is very painful to the touch or when pressed upon. The pain is almost unbearable when he lies on his back. Ordered a warm flaxseed poultice to be applied over the abdomen, and an enema of twenty drops of laudanum, which in a short time gave him much relief. Was called to him at 8 P. M., and found him dying. Respiration ten per minute; no radial pulse at either wrist; heart's sounds scarcely audible; impulse not perceptible; whole body cold.

He died at 5.30 A. M., August 3.

Post-mortem examination, three hours after death, revealed the following: Body of a pale waxy hue, very white, with a slight tinge of yellow on the face. Greatly emaciated; eyelids and feet somewhat œdematous; well-marked cadaveric rigidity; body cold.

Thorax.—Upon cutting through the tissues, the muscles were found very much blanched. Raising the anterior wall of the chest, the right pleural cavity was filled with a clear greenish serous fluid, the lower and middle lobes of the lung being perfectly collapsed, the lower lobe being firmly bound down to the convexity of the diaphragm; the upper lobe, about four inches long and three inches broad, was the only portion of the whole right lung which was crepitant, and was seen floating in the fluid at the apex of the chest. The left lung was healthy, and bound down posteriorly by a few old bands. There was no fluid in the left pleural cavity. The heart was slightly pushed to the left. The pericardium was distended with about eight to ten fluidounces of serum; eight inches in length, and six in breadth, being the external dimensions of the distended pericardium. The serum was clear, and of a light yellow colour. The heart was rather small, but otherwise apparently healthy.

Abdominal cavity.—The abdomen was somewhat distended, and contained about four quarts of an opaque yellowish fluid filled with flocculi and shreds of soft yellow lymph. The intestines were distended with flatus and feces, and were everywhere glued together and to the peritoneum by soft yellow lymph, showing the occurrence of recent peritoneal inflammation. The intestines externally presented no evidence of perforation, or any marked internal inflammation or congestion, but presented an unhealthy appearance, being of a leaden hue. On the internal surface of the bowel, patches of this leaden-coloured discoloration were seen here and there throughout the entire length of the intestine, from the stomach to the rectum. In the small intestine the solitary glands and Peyer's patches were somewhat elevated and discoloured, the change being more and more marked as the ileo-cæcal valve was approached. The surface of the ileum just above the valve, to the extent of about five inches, presented the shaven

beard appearance, as did also the Peyer's patches. The valve and the cæcum presented the shaven beard appearance, and the valve was very much thickened. The colon was very much thickened, every part of the intestinal wall being apparently thickened. The mucous membrane was very much softened, covered with thick mucus, and presented throughout the whole length of the colon numerous small rounded elevations having a slightly depressed centre, some injected and others pale; each elevation being about one-fourth of an inch in diameter, and appearing to be the cicatrices of old ulcers. These were rather more numerous and of more recent formation near the rectum and in the sigmoid flexure, where a few small chronic unhealed ulcers were seen. The intestines contained a considerable quantity of yellow liquid feces, containing some small portions of firmer consistence, which adhered to the sides of the intestine. The stomach was healthy.

The *liver* was almost concealed from view by the diaphragm, which was closely adherent to its whole diaphragmatic surface. The adhesions between the liver and the diaphragm were of recent origin, but somewhat firmer than those between the convolutions of the intestines. The superior surface presented externally a large abscess, looking like a fungus, from the fact of its being made up of numerous small abscesses communicating with each other. This abscess was covered by the diaphragm, and extended about eight inches from right to left, and five inches from front to back. The healthy portions of the liver were slightly yellow, and looked fatty. The unhealthy portions were of a dark bluish-brown colour, bulging, and dotted here and there with small yellow elevations, each about the size of a marble, which, when punctured, were found to be filled with apparently true laudable pus. The under surface was much more healthy in appearance. There was one yellow prominence containing pus upon the lobus quadratus, near the gall-bladder. The gall-bladder contained no gall-stones, but was full of healthy-looking bile. The liver was considerably larger than natural. Upon making a transverse incision three inches deep into the body of the organ where the abscess presented externally, the abscess was found to be made up of numerous small abscesses communicating with each other, the largest thus opened being about the size of a hen's egg. Each of the abscesses was filled with apparently healthy pus.

The *spleen* was about the normal size, but was shrivelled, and looked like a contracted spleen. Internally it was very firm, and of a light arterial red colour.

The *kidneys* were of normal size and appearance externally, but internally were very firm and pale, and felt like cartilage. They looked like amyloid kidneys in places, though they were not.

The *bladder* contained but little urine.

Microscopical appearances.—The blood was examined on the 28th of July, and the red corpuscles were found diminished in number, shrivelled somewhat, and some of them granular. The white corpuscles were perhaps slightly increased in number. There were no pigment granules. Contents of hepatic abscess, under the microscope, were seen to consist of granular matter, granular corpuscles without nuclei, and true pus-corpuscles, in abundance.

Liver-tissue.—Cells contained more than normal amount of fat, but preserved their nuclei.

The portion of the intestine which presented the shaven beard appearance contained grains of black pigment deposited in fine points in the mucous membrane.

Oct. 10. *Two Cases of Rupture of the Bladder.*—Dr. H. WILLIAMS presented the specimens and made the following remarks:—

James Benton, æt. 26, a native of Ireland, and very intemperate, fell, while intoxicated, from the mineral water wagon he was driving, and was run over. When brought to the Pennsylvania Hospital, half an hour later, he was in a condition of stupor, partly alcoholic, and in part from primary shock. The pulse was rapid, thready, and compressible, with a moist, pallid skin. The hips, thighs, and lower part of the abdomen showed signs of contusion, and were said to be the points over which the wheels passed. Considerable gastric irritation succeeded the stupor, with much cramp, colicky pain, and tympanitic distension of the abdomen. Several times, with difficulty, he passed small quantities of urine, always mingled with blood; the latter more or less deeply tinging it. He lived 34 hours after the injury in great constitutional depression, and died with little change of symptoms, save that the abdomen became more tense.

Post-mortem six hours after death.—Abdomen alone opened, which contained a full quart of mingled blood and urine; the pelvis was packed with clots of blood; there was a linear opening 1½ inch in length in the left posterior-vertical aspect of the bladder, the edges of which presented the appearance of having been separated by a disruptive force.

Mary McKees, æt. 53, a native of Ireland, was run over on the eve of Oct. 3d, 1866, by a wagon. On admission to the Pennsylvania Hospital within an hour after, she presented the following symptoms: A pulse of 130, characterized by great feebleness, respirations 28 in the minute, with a quite frequent tendency to yawn; the skin cool and damp, with marked pallor of general surface, while over the mons veneris there were marks of severe contusion, over which point the wheels were said to have passed. The crepitus of broken bone was easily obtained by grasping the iliac crests, and making movements from those points. Several hours later she was unable to void her water, and the catheter being introduced, about two ounces were drawn off so mingled with blood as to greatly interfere with its passage through the instrument. The patient complained greatly of cold, and external warmth, with diffusible stimuli, was employed, and the dorsal decubitus enjoined. The patient lived a little over 48 hours, with some reaction from her first depression, and was even cheerful; but the extreme pallor continued, and there was much tympanitic distension of the abdomen, with great tenderness over the lower part. An aperient produced a free evacuation of the bowels. The catheter, introduced twice in the 24 hours, never drew off more than 2½ oz. of urine, in which the admixture of blood became less and less, latterly only amounting to a tinge. She continued in great depression until death took place, on the eve of October 5th.

Post-mortem twelve hours after death.—Abdomen alone opened, which contained a pint and a half of mingled blood and urine. There were traces of old peritonitis in well-organized, firm adhesions, binding the omentum and some convolutions of the ileum together. Beneath the peritoneum, lining the pelvis, there was much extravasated blood mingled with urine. The left pubic portion of the os innominatum had sustained a much comminuted fracture, and a sharp fragment had inflicted a penetrating wound of the bladder, to the left of its mesial line, and about 1¼ inch below the point where the peritoneum is reflected from the fundus to the anterior wall of the abdomen. The bladder was collapsed and empty, save a few clots of blood.

REVIEWS.

ART. XIV.—*Clinical Lectures and Reports by the Medical and Surgical Staff of the London Hospital, with an Appendix on the Recent Epidemic of Cholera.* Vol. III. 8vo. pp. 499. London, 1866.

CLINICAL instruction has of late years been made a very prominent part of medical education, and very properly so; but its usefulness has been impaired often by abuses which have crept in, some of which are the necessary result of the very mode of education which is generally pursued in our profession. It will be profitable, therefore, as introductory to our notice of the book under review, to consider the proper place and function of clinical teaching in medical education.

It should not be entered upon at the outset of the course of study. There needs to be some degree of preparation on the part of the student to enable him to profit by it. The present custom is to have the fresh students attend with the advanced upon clinical lectures. The actual instruction imparted to the former is much less than that which comes within the grasp of the latter. It is so little, indeed, that it may be truly said that they had better occupy their time in some other way. But it is not a mere loss of time that is the chief objection to the plan. It is the injury that it inflicts upon the mental habits of the student. It tends to make him a poor observer and a loose thinker. He hears so much that he cannot understand, that he insensibly forms the habit of taking but little of what he hears fairly into his mind, and of holding that little very loosely. It may be in the case of a few who have uncommonly active minds, and who have been trained in strict habits of thought and observation, that what is actually understood is culled out carefully from what is not, and is garnered up in the memory. But there is no such sifting process in the minds of the great mass of students of medicine; and, therefore, the subjecting them to attendance on lectures which are for the most part beyond their comprehension, confuses their ideas, and materially impairs their mental vigor and clearness.

There is another point of importance. The profit which a student gets from instruction depends upon the interest which it awakens in his mind, and this again depends chiefly upon the degree to which he understands what he hears. If then the great majority of what he hears is beyond his comprehension, how much must his interest be dampened, and how injurious is it to have this effect produced upon him at the very outset of his education.

There is another point still. So shadowy and confused are the glimpses of truth which the fresh medical student gets in the clinical lecture, that some errors will inevitably be lodged in the mind, which may or may not be got rid of in future instructions. And errors are certainly most of all to be deprecated in the practical part of our teaching.

This misplacement of clinical instruction is only one phase of a general fault that exists very glaringly in the prevalent symptom of medical edu-

cation. The fault is a radical one. The want of due sequence and gradation in studies is the grand cause of failure, and the looseness of thought and observation thus engendered stamps its character upon medical practice, and of course upon medical literature. We would like to dwell at large upon this point, but this is not the place for it.

A word on the style of clinical lecturing. It sometimes is not really clinical, but is like the general lecture, the only thing clinical about it being an occasional and perhaps slight reference to the patient. Like the text of some sermons, he is almost lost sight of, and a full lecture is given not only upon the malady from which he is suffering, but upon other kindred maladies also. The clinical lecture should be especially upon the points presented by the cases, particularly in regard to diagnosis, and the aims of medication; and full descriptions of the diseases should be deemed out of place. No one should ever have occasion to say of a clinical lecture on a patient, as we have sometimes heard it said, that for all practical purposes the patient might as well have been out of sight.

It should be made quite an object to exhibit to the students the modes of investigation which should be pursued in making out a diagnosis in different cases. We refer both to the direct examination of symptoms, and the sifting process, which more or less has to be applied to the statements of patients in regard to their own cases. The unravelling of a case is often the very highest instruction that can be given, and it is what cannot be imparted in a general lecture on disease.

No lecture has more of the essentials of interest than a clinical lecture. Whatever is practical is always interesting. Then, besides, there is the actual presence of the thing talked about. And there is added also, we think we may say very commonly, the interest of sympathy with the diseased and suffering. Now, there are some that seek to add to all this a sort of theatrical charm, degrading the clinical lecture to an occasion for self-display and the mere idle gratification of the audience. And sometimes, we regret to say, that in doing this delicacy and propriety are outraged.

Hospitals present fine opportunities for furnishing to the profession extensive reports of classes of cases. There is an advantage here over private practice in many respects—in the number of cases of any one disease, in the facilities for making minute records, and in the entire control of all the circumstances of the patients. At the same time it is to be remembered that hospital practice and private practice must necessarily be often different from each other. In acute diseases in hospital practice there are more often cases brought under treatment that are at an advanced stage, or that perhaps have been already treated, and in what way it is either known but partially or not at all; and in chronic diseases the patients have very commonly gone through a considerable experience of suffering, and of treatment, medical, or quackish, or both, before they come to the hospital. To say nothing of other differences, there is more call for stimulants and tonics in hospital than in private practice. Full reports of both, so that the requisite comparisons may be made, would be exceedingly valuable. We have not enough of such minute records. Conclusions, inferences, summings up of results we have in great abundance. But these take too much the colouring of the opinions of the individual, which very often may be found to be somewhat inconsistent with the facts, if they are recorded with any degree of faithfulness and minuteness. The great need of the profession in therapeutics is full records of cases, giving in each disease the mild

and the severe alike, and also those in which the treatment is unsuccessful as well as those in which it is successful. On this latter point there is often a glaring defect. The account which Graves gives of the use of tartarized antimony and opium in certain conditions of typhus fever, valuable and significant as it is, is much marred in this respect. He reports quite circumstantially all the cases in which the treatment resulted in recovery, but while he refers to cases in which it was not successful, he does not give us the details of one of them. These might have thrown some light upon the proper limitations of the practice, and cleared up some points that need to be cleared up. We would not be understood as throwing any doubt upon the real value of the contribution that he has thus made to our therapeutics, for we have witnessed ourselves in the most marked manner the success of the practice; but the omission referred to has prevented him from giving to us its full value.

Reports of cases may be full, and yet may be very poor reports. A minute observer may not after all be a good one. He may make altogether too much of some facts and too little of others, and this fault will be seen in his description of cases. In the midst of his minuteness he may even overlook some circumstances that are of prime importance. In a good and correct account of a case all the facts are brought out in their due proportion. To do this, there is required, first, skill in observation, and second, skill in representation, the first being a *sine quâ non*.

Sometimes we find strange omissions on the part of those who may be called good observers. This is commonly owing to the influence of some opinions that bias the mind in its observation. One of the most striking examples of this omission we have in Louis' two volumes of cases of fever. Here, with extraordinary minuteness of observation on most points, the record of the number and the character of the alvine discharges is exceedingly meagre. And yet observation should certainly have been decidedly directed to that quarter, in connection with the lesion which was found so uniformly in the intestines.

It is minute, judicious, and comprehensive observation that is to do the great work in diagnosis and therapeutics. To this has our profession very much come at last, after ages of blundering about among dazzling theories. The time has gone by for the framer of an ingenious general theory of medicine to bear rule. It was because this reign of rigid observation was setting in that Broussais, the last of the long succession of theorizers, unlike his predecessors, lived to see his theory die out, though at the first he had multitudes of adherents. The question now is not so much what one thinks, but what does he know—what has he found out—what has he proved. Suppositions, indeed, on particular points are indulged, as pioneers in getting at the facts; but these are very different from those compounds of facts and suppositions which have been termed theories in medicine in the ages that are past.

In this work of observation our hospitals are to bear a prominent part, from their facilities for making it thorough, exact, and comprehensive. We are glad, therefore, to see that some of them are publishing annual reports of their observations and clinical lectures. The volume before us is a collection of this character for the year 1866.

With these preliminary observations we propose to notice some of the contents of the volume.

One of the most interesting papers in the volume is on Spectrum Analysis, by Dr. LETHEBY, the Professor of Chemistry at the London

Hospital College. What is said of the physiological and medical uses of this means of investigation is preceded by a historical account of the successive discoveries that have led to the rich facts which are at length developed. A brief summary of these will not be uninteresting to the readers of this Journal.

The discovery of the solar spectrum was made by Sir Isaac Newton, in 1701. His experiments were repeated for a whole century without adding anything in the way of discovery. But in 1802, Wollaston, by using a narrow slit instead of a circular aperture for the admission of the sun's rays, produced a far more perfect spectrum, and dark bands, not before seen, now intersected the colours. He also examined the spectra of different kinds of light, as the flame of a candle, and electric light, and he noticed that the spectra differed much from each other. And here was in reality the starting-point of spectrum analysis. But how much significance there was in these dark bands or lines, and in the differences of the various spectra, was utterly unknown to Wollaston, and was to be discovered only by multiform and long-continued investigations. Indeed, the researches of a half century have probably fallen very far short of developing all of it.

In 1815, Fraunhofer, a German optician, fixed the prism before the object-glass of a telescope, and the spectrum being thus magnified showed the dark lines seen by Wollaston so distinctly, that he recognized and marked the relative position of over six hundred of them, distinguishing the most important by capital letters, and the least important by small ones. He knew that these lines must mean something, and though he did not himself divine their meaning, he with true scientific zeal did the work, and placed the results on record—results which have since proved to be of great value, being constantly referred to in investigations at the present time.

In 1822, Sir David Brewster examined the spectra of flames coloured with various salts, such as are seen displayed in pyrotechnic chemistry. Sir John Herschel, in the same year, pursued the same line of investigation. He stated as the result, *that the colours communicated by the different bases to flame afford, in many cases, a ready and neat way of detecting extremely minute quantities of them, and that the tint arose from the molecules of the saline matter reduced to vapour, and held in a state of violent ignition.*

A year or two later, Mr. Fox Talbot pursued the investigation still farther, developing new facts which illustrated beautifully the truth above stated.

In 1835, Mr. Wheatstone gave an account of the spectra produced by the prismatic decomposition of the electric, voltaic, and electro-magnetic sparks, and also of the different spectra when the sparks were taken from different metals; and after many observations, he states that the appearances are so characteristic, that by this mode of examination the metals may be readily distinguished from each other. He also discovered that the results were not produced by combustion, for the appearances were the same when the sparks were taken in the vacuum of an air-pump and in carbonic acid gas.

From this time there were many observers working in this field, bringing out many valuable facts, and approaching very nearly to conclusions which, by patient and varied investigation, were reached many years afterwards. For example, Dr. W. A. Miller, of Cambridge, England, said, in 1845, as a result of his observations, "It would therefore appear that luminous atmospheres exist in which not only certain rays are wanting, but which

exercise a positive absorptive influence on other light"—a very strong foreshadowing of an important discovery announced by Kirchhoff, in 1859, which we shall notice soon.

The delicacy of the test which spectral analysis offers is wonderful. Swan found, for example, that he could detect the presence of the $\frac{1}{2500000}$th of a grain of sodium by its characteristic yellow line; in fact, the reaction of this metal is so delicate, and the presence of common salt in air and water is so universal, that it is very difficult to get a flame free from the sodium line. Bunson and Kirchhoff deflagrated different substances in a room, noting the prismatic effects. Calculating from the area of the room and the quantity of matter diffused, they estimated that it was possible to recognize the $\frac{1}{600000}$th of a grain of potassa or baryta, the $\frac{1}{1000000}$th of a grain of lime or strontia, the $\frac{1}{200000000}$th of a grain of lithia, and the $\frac{1}{1500000000}$th of a grain of soda. And the presence of these different substances can be discovered in the spectra even when they are mingled together, for as they are volatilized at different temperatures, the several spectra follow each other in the order of their volatility.

"Other examples," says the lecturer, "of the delicacy of the test may be given, to show how certainly and easily the minutest portion of these alkaline metals may be discovered. If a little of the ash of a cigar is put upon a platinum wire, moistened with muriatic acid, and then heated in the flame, it shows the characteristic lines of sodium, potassium, lithium, and calcium; and the residue of a single drop of sea-water, treated in the same manner, exhibits the spectra of sodium and calcium. A drop also of the mother-liquor of almost any mineral spring, will show the coloured lines of nearly all the alkalies and alkaline earths.

"It is, therefore, easy to understand how, by this method of research, traces of substances have been found, where they were not suspected to exist, and where, but for this process, they might have remained forever undiscovered. The alkali lithia, for example, once thought to be so rare, is now known to be widely distributed. It has been recognized in a large number of mineral waters, in the ashes of tobacco, in vine leaves, grapes, the tartar of wine, the potashes of commerce, and, indeed, in the ashes of all plants which grow upon certain granitic soils. It has also been found in the milk of animals feeding upon those pastures, in human blood, and in muscular tissue. Strontia also, instead of being a comparatively scarce substance, exists nearly everywhere in the mineral kingdom: it is present in sea-water, in the incrustations upon the boilers of sea-going vessels, in chalk, in certain marbles, and in a great variety of limestones. The new metal, thallium, has likewise been found in many pyritic minerals, associated with copper and iron; and it has been recognized in the ashes of the grape, tobacco, and chicory; and in treacle and wine. The extent to which these researches may be applied in gaining information of the mineral constituents of animal and vegetable tissues is almost unlimited; and the influence of them on the future of physiology is hardly to be conceived."

By this minute mode of analysis several new metals have been discovered. On this point Dr. Letheby says:—

"I may mention that while Bunsen was in this way examining the residue of a mineral spring at Durkheim, he observed the appearance of certain blue and red bands in the spectrum, which were not common to any known substance, and by pursuing the inquiry, he discovered two new metals of the alkaline series which he named *Cæsium* and *Rubidium*. The former was so named, because of its producing two characteristic blue lines of a sky colour (*Cæsius*), and the latter from *Rubidus*, dark red, in consequence of its showing two red lines at the very edge of the red end of the spectrum. The quantity of these metals in the Durkheim water was not more than about three grains per ton of water. In like manner *Thallium* was discovered by Mr. Crookes, in March, 1861, in the seleniferous deposit from the sulphuric acid manufactory at Tilkerode, in the

Hartz Mountains; and it was so named from *Thallus*, a budding twig, on account of the beautiful green line which distinguishes its spectrum. *Indium* also, a fourth new metal, was discovered in 1863, by MM. Reich and Richter, of Freiberg, in a Saxony zinc-blende, and was thus named because of the two splendid indigo-blue lines which characterize its spectrum. The first of these metals, Thallium, is of the nature of lead, and gives a bright green tint to a colourless flame; while the second, Indium, is closely related to zinc, and gives a rich violet-blue colour to flame."

Of all the spectra those of the alkalies and alkaline earths are the most characteristic, and they are the most easily obtained. In regard to the metals, the proper way to develop their spectra is to convert them into volatile salts, and of all salts the chlorides are the best.

Mr Reynolds has contrived a simple but ingenious plan by which nearly all minerals can be made to show the spectra of their constituents. He uses the double blowpipe jet of Mr. Herapath, and by supplying it with hydrogen, and blowing steam charged with muriatic acid through the inner jet, he decomposes the fragment of mineral held in the flame, producing chlorides, which give their characteristic spectra. The spectra of the less volatile metals are best observed by letting the electric spark between fine wires of them. The peculiar tint of the metal is displayed in the spark by the volatilization of a minute quantity of it by the heat and the disruptive force of the electricity.

Non-metallic substances, as well as metallic, have been subjected to spectral analysis. In all cases the character of the spectrum is influenced by the degree of heat applied, becoming both more brilliant and more complex as the heat is increased. In fact, a solid or liquid, so long as the heat is not sufficient to make it otherwise, though it may produce luminosity, will give only a continuous spectrum, having simply the tints of the rainbow; and it is only when the gaseous flame or electric spark changes the substance into an incandescent, gaseous, or vaporous matter, that the characteristic non-continuous spectrum is produced.

We have already alluded to the discovery of Kirchhoff, foreshadowed by Dr. Miller. Others approached even nearer to it than he did, as Foucault and Augstrom. The discovery, which was not made till 1859, was this—that the rays which a substance emits are the very rays which it absorbs. For example, sodium, when ignited, emits an intensely brilliant yellow light, which makes in the spectrum two closely contiguous bands of yellow; but if through the flame of sodium, the more powerful beams of the electric or oxyhydrogen light are transmitted, black lines appear in place of the yellow sodium lines, showing absorption. Kirchhoff also ascertained that certain of the bright bands in the spectra of potassium, lithium, barium, and strontium, may, in like manner, be reversed.

On this Dr. Letheby remarks:—

"The explanation of this is very simple, and it applies to the corresponding phenomena of radiant heat, as well as to those of actinic or chemical action. 'Atoms,' says Professor Tyndall, 'which swing at a certain rate, intercept waves which swing at the same rate. The atoms which vibrate red light, will stop red light; the atoms that vibrate yellow, will stop yellow; those that vibrate green, will stop green, and so on. Absorption is a transference of motion from the ether to the molecules immersed in it, and the absorption of any atom is exerted chiefly upon those which arrive in periods coinciding with its own rate of oscillation.'[1] This is true of every variety of vibration, and in the case before us the vapour of a metal put in the tract of a beam of light, will

[1] Heat considered as a Mode of Motion, p. 468.

stop its own peculiar vibrations, and, therefore, will produce dark bands in those very places in the spectrum where its own characteristic coloured bands would have appeared. Or if the bands are obtained from the incandescent vapour of a metal, and the light thereof is made to pass through a similar vapour, the course of the light is stopped, and there are no bands at all. The reason, therefore, why incandescent solids and liquids exhibit a white light, and produce a continuous spectrum, consisting of all the prismatic colours, is that their atoms or molecules swing in every variety of vibration from the red to the violet; whereas the vapour of an element swings only in certain vibrations, and thus produces a coloured flame which gives only the few bands of the spectrum which are characteristic of that flame."

And now we come to some most wonderful results of these discoveries. In regard to them Dr. Letheby says:—

"The application of these facts to the interpretation of the luminous phenomena of the universe, and more especially to the analysis of celestial objects, is most interesting; for as the results are not influenced by distance, it follows that whenever there is light enough from any planetary body to produce a spectrum, it affords the means of ascertaining its nature, and of determining its condition. If, for example, it is found that the light emitted by any star or far-off luminous object gives a spectrum with the characteristic bands of ignited terrestrial matter, it is proof that such matter exists therein; and if the spectrum is continuous, it is manifest that the light comes from an incandescent solid or liquid; whereas if the spectrum is not continuous, but consists of only a few bands of colour, it shows that the light is emitted by matter in a state of gas or vapour. And if, in addition to the continuous spectrum, there are dark lines in it, it proves that there is a central mass of ignited solid or liquid matter, with an atmosphere or envelope of vapour through which the light passes, and by which certain rays are absorbed or darkened. This is the interpretation of the dark lines of Fraunhofer in the solar spectrum, which have been for so long a time the puzzle to philosophers. According to the hypothesis of Kirchhoff, the sun consists of a central orb of molten or solid matter intensely heated, and as this emits rays of all kinds of refrangibility, it would give a continuous spectrum, without a break or bar in it, were it not that it is surrounded by a vaporous envelope through which the rays must pass; and in so doing they are partly absorbed; for each element of the gaseous envelope strikes down the very rays which it does itself emit, and thus produces its own black lines. If we could see the spectrum of the envelope alone, without the luminous orb behind it, we should see the very bands, which are now dark, lighted up with their characteristic tints. It would be, in fact, the complex spectrum of all the elementary gases and vapours existing in it. Examined, therefore, from this point of view, we have in the black lines, the dark or reversed spectrum of every element in the solar atmosphere; and we have but to compare them with the spectra of terrestrial vaporous matter to determine their nature. In this way the labours of Kirchhoff and Bunsen have been directed to the spectral analysis of the sun. The position of every line has been compared with the spectral lines of terrestrial matter; and although much has been done in determining the chief constituents of the solar atmosphere, yet as each line must be accurately compared in every particular, it will take many years before the whole of them can be properly studied. Already about 2000 of them have been thus mapped out; and they indicate the presence in the sun's atmosphere of sodium, calcium, barium, and magnesium; with iron, nickel, cobalt, chromium, copper, and zinc. There may also be potassium and strontium; but there are no traces of lithium, cæsium, rubidium, aluminium, arsenicum, mercury, silver, gold, cadmium, tin, lead, silicium, or antimony."

This celestial chemistry has been earnestly studied by many observers, Kirchhoff and Bunsen in Germany, Donati in Italy, Miller and Huggins in England, and Cooke in this country, and the results thus far are of the most interesting character. The moon is proved by the spectrum which it gives to have no atmosphere, while Venus, Mars, Jupiter, and Saturn show

that they have an atmosphere, by certain dark lines upon their spectra. About fifty of the fixed stars have been examined, and as their spectra are very nearly the same as the solar spectrum, it is inferred that they are centres of light—self-luminous, and of the same structure as our sun. The nebulæ have been examined, and while the results obtained coincide with the observations made with the telescope, in eight instances where the telescope has not been able to discover distinct points, it has been concluded from their spectra that they will never be resolved into groups of stars, but are only masses of luminous gas.

In May last a new star was discovered in the constellation of the Northern Crown, which, examined by Dr. Miller and Mr. Huggins with the prism, revealed some singular phenomena. There were three spectra—one like that of the sun, another with dark lines, and over this a third, with very bright lines. It was concluded, therefore, that this star was like the sun and the fixed stars, an orb of incandescent matter, with an atmosphere of cooler vapours, and that it also had another atmosphere which was still more luminous. And as there had been a sudden outburst of brilliancy in the star, it is inferred that some great convulsion took place which evolved large quantities of gas, and that it is the burning of hydrogen in its combination with some other element, that produces the bright lines in the spectrum; also, that this combustion has heated to vivid incandescence the solid matter. Then, as the hydrogen becomes exhausted, all the phenomena become less intense, and the star rapidly wanes.

We pass over some very interesting statements in regard to the spectra of the rays of heat, and the actinic or chemical rays, and come to what most interests us as medical men.

This spectrum analysis is capable of very broad application. It has been extended into physiological researches, and used as supplementary to investigation by the microscope, confirming its results, or even settling questions where the microscope fails.

The notice of its use in these investigations is thus introduced by Dr. Letheby:—

"That, however, which is especially interesting to us is the application of chromatic spectrum analysis to the recognition of organic and other colouring-matters, and to the discovery of their chemical and physiological nature. The blood, for example, when examined for its spectrum under the action of different reagents, shows that the colouring-matter is principally concerned in the phenomena of respiration: and the appearances of the spectra are so remarkable, that they become the means of discovering the presence of blood in very minute quantity. Professor Hoppe was the first to notice this;[1] and he became acquainted with it by passing a ray of light through a weak solution of blood, and examining it with a prism: he then observed that the blue end of the spectrum was cut off, and that two dark bands appeared in the green. The same effect was produced with the red blood of all animals, and he, therefore, proposed to use it as a means of medico-legal research. Later still, in 1864, Professor Stokes continued the inquiry;[2] and he ascertained that the colouring-matter of the blood, when fresh, was very different from the hæmatin of Lecanu; for it was soluble in water, and had the power of absorbing oxygen, and giving it out with great facility, and that the spectra in the two states of oxidation were very different. He, therefore, named the substance *cruorin*, distinguishing the bright red arterial or oxidized cruorin by the name of *scarlet cruorin*, and the purple or venous deoxidized cruorin by the name of *purple* cruorin."

[1] Virchow's Archiv. vol. xxiii. p. 446 (1862).
[2] Proceedings of the Royal Society, vol. xiii. p. 355.

The important distinction between the hæmatin of Lecanu, and the cruorin of Stokes, appears very decidedly in the comparison of the spectra. Hæmatin is cruorin chemically changed, either quickly by the application of certain acids, the acetic, citric, or tartaric, or gradually by atmospheric action, probably of an acid character. Cruorin exists in two states, as *scarlet or oxidized cruorin, and purple or reduced cruorin*, and the spectra of the two are different from each other. The same is true also of hæmatin.

Long before these investigations of Stokes, grave doubts were entertained of the identity of hæmatin with the colouring matter of the blood, as it appears in the red corpuscles. Lehmann expressed himself very strongly on this point, saying that it was by no means certain whether it is a product of metamorphosis of the true colouring matter of the blood, or whether the hæmatin obtained bears the same sort of relation to that in the blood-corpuscles as coagulated albumen bears to that principle in its fluid state. But it now appears that it is a real metamorphosis, a chemical change that produces it from the cruorin of Stokes.

Cruorin very greedily absorbs oxygen, and also very readily parts with it under the action of reducing agents. The oxygen is, therefore, as it unites with it in respiration, not chemically combined with it, or at least has some kind of loose union with it, "something" as Dr. Letheby says, "like that which fixes gases in water, or which holds the second molecule of carbonic acid in bicarbonate of soda, all of which are easily displaced."

There are both scarlet and purple cruorin in venous blood, the latter being even in comparatively small proportion. This has an obvious relation to the fact that both oxygen and carbonic acid are contained alike in arterial and venous blood, the proportions being different in the two cases, the oxygen being to the carbonic acid as six to sixteen in arterial blood, but as four to sixteen in venous.

The delicacy of the spectrum analysis in the detection of the presence of blood is very remarkable. The $\frac{1}{100}$th of a grain of liquid blood may readily be made to exhibit all the characteristic spectra. As an example of the delicacy of the tests, Dr. Letheby states that in the year 1849 he had occasion to make a medico-legal investigation of some blood-stains on linen, and the specimens which have been kept to this time (seventeen years) have been recently examined both by Mr. Sorby and himself with the production of the characteristic spectra with perfect distinctness.

That spectrum analysis will hereafter be of decided service in pathological investigations we have much reason to expect. We close this notice of Dr. Letheby's valuable paper by quoting a paragraph on this point.

"As to the change which the colouring-matter of blood undergoes, when it passes from cruorin to hæmatin, we have but little knowledge, except that it occurs spontaneously, and under the influence of very slight causes. How far this may be concerned in the development of pathological phenomena is hardly to be surmised. The different appearances of the blood, in certain diseases, not only when it flows fresh from the vein, but also when it is seen in the dead body, may, perhaps, be due to abnormal differences in the proportions of scarlet and purple cruorin, or even to the presence of their altered products—hæmatin. Already the observations of Engel and Rokitansky have discovered a more than possible connection between the colour and consistence of the blood in the dead body, and its tendency to soak or diffuse into the tissues, and accumulate in certain organs, and they have even classified these physical properties of the blood into six kinds—each characteristic of a special group of diseases. And if to these observations, which are purely pathological and anatomical, there are added the exact investigations of the chemist, and the careful results of a

searching spectrum analysis, we may hope for a rich accession of scientific facts."

In a paper on diabetes there are six cases reported, three of which ended fatally, and the other three were discharged at their own request, there being some improvement, but no evidence, however, of a real cure. The treatment was, as usual in this disease, very unsatisfactory, and nothing new appears in the article as to the pathology of the disease, though a summary is given of the opinions that have been broached in regard to it.

In a paper by Mr. Hutchinson, surgeon to the hospital, and also surgeon to a hospital for skin diseases, there are details of five cases of unilateral herpes, or herpes zoster, and a tabular account of twenty-seven cases. He starts an interesting inquiry in regard to the nature of the disease thus:—

"*Is herpes zoster an exanthem or a neurosis?* If an exanthem, why, then, is it not symmetrical, not attended by constitutional disturbance, not liable to spread by contagion? If a neurosis, why should it not relapse, why should it have stages, and how can it protect the individual against a second attack? There is no other neurosis which can be mentioned (neuralgia, for instance), which is not very liable to relapse, or to return again after cure. My own suspicion is that it belongs to neither of these classes, but that it constitutes a new group by itself, and further, I feel convinced that whoever may succeed in unravelling the mystery which at present surrounds it, must, at the same time, make a discovery in physiology."

He then proceeds to state and comment upon the following propositions.

Herpes zoster may occur at almost any age, and if we except early infancy, is equally frequent at all periods of life.

The two sexes are equally liable to its attacks.

It is not possible to denote any special condition of general health which predisposes to its attacks.

It is not contagious.

As a general rule it does not occur twice in the same individual.

The eruptions (with the very rarest exceptions) are never symmetrical.

It occurs with equal frequency on the two sides.

It generally observes closely the recognized anatomical distribution of some nerve.

The nerve affected is normally a cutaneous one, but this is not invariably or exclusively the fact.

The disease runs a definite course.

In regard to the frequency with which it occurs on the one side or the other we have heard it often asserted that it almost always occurs on the right, and this is certainly true of all the cases that we have seen of the disease on the trunk of the body. On this point Mr. Hutchinson says:—

"An interesting instance of the fallacy of individual opinions when formed without careful statistical inquiry, may be mentioned in the fact, that Reil says that herpes 'always occurs on the *left* side;' and Biett, that 'in nineteen cases out of twenty it is on the *right*.' The two asserters are almost equally in error.

"Sir Thomas Watson, in fifteen cases, found it on the right in ten, and the left in five. Rayer, in fifty-three cases, right, thirty-seven, left, sixteen. Mehlis, of twenty-five cases, right, nine, left, sixteen. The total of these observers gives ninety-three cases, and fifty-six on right side to thirty-seven on the left. In my own experience, I have in sixty-two cases, seen it on the right in thirty-two, and on the left in thirty. We may, therefore, conclude that it manifests no very appreciable preference for one side over the other."

We hardly subscribe to the opinion of Mr. Hutchinson, that "shingles is not a disease of the skin in any correct sense, and that the so-called derma-

tologists have no claim to it whatever." We allow that nervous influence is indeed more decided and obvious in this than in other cutaneous diseases, but it is not enough so to take it out of their company. Herpes zoster is a cutaneous disease, perhaps we may say an exanthem, but one of a very peculiar character. In some respects it stands alone by itself, just as hooping-cough does among the paroxysmal neurose diseases. We apprehend that nervous influence has more play in cutaneous diseases than it commonly has credit for. Why do boils appear in one part of the skin after another? Why do cutaneous diseases ordinarily tend to diffusion? Is there a virus, a *materies morbi*, that develops disease here and there, or is the diffusion not generally owing, for the most part at least, to nervous sympathy inducing one part of an organ to take on an action similar to that going on in another part of it? This nervous influence we often see manifested in the generation of disease in an organ sympathizing with the part originally affected. One of the strongest illustrations of this that we ever saw occurred in a case of cancer of the mamma. We had removed the tumour, which was a very large one, and the patient some weeks afterward died of disease in the lungs. On examination after death we found cancerous deposit in the lung on the side from which the tumour was removed. There was a deposit in the skin along the cicatrix, which was shown also by the microscope to be cancerous, while there was none at all in the original seat of the disease. Now why was the deposit made in the lung? Perhaps it will be said that here there certainly was a *materies morbi*, a taint in the blood. Granting this, the question returns, why did it develop itself in that particular locality? There is no vascular connection to account for it. It must be owing to that sympathy between the lung and the exterior of the chest, of which we make a practical use every time that we apply a blister to the chest in the neighbourhood of an inflamed lung.

There are two clinical lectures on four cases of complicated stricture by Mr. Maunder. The details of the cases are given so clearly, and with such comments, that much valuable information is communicated in relation to the minute management of such cases. One of his practical deductions from one of the cases is this: That a bladder may be greatly distended, and yet a fair quantity may be passed daily without emptying that viscus. We believe that mistake is not very infrequently made on this point. Some little time since we attended an autopsy in which an enormous quantity of fluid (some quarts even) was found distending the bladder, and yet the patient was reported daily to the attending physician as having passed sufficient water. We are reminded also of another case, in which a young physician supposed certain apparently grave symptoms to indicate the onset of peritoneal inflammation. An older physician, who was called in consultation, suggested that the bladder might be distended, and that this might be the cause of the symptoms. But it was said that the nurse reported the water to be free. The catheter, nevertheless, was used, and the removal of a large quantity of urine relieved the patient.

There is a lecture also by Mr. Maunder on strangulated hernia, which is marked by the same practical good sense as are those on stricture. He says of the use of opium: "Speaking generally, I may say that this drug is a dangerous remedy *before* reduction, either with or without operation; but a valuable agent *after* reduction. There are exceptions to both statements." He says of its use before:—

"The drug checks vomiting, alleviates pain, and has a grateful influence upon the patient generally. But under these apparently happy effects, a mor-

bid process is steadily at work, and the necessary operation is perhaps only performed when the pathological condition of the hernia renders it no longer capable of performing its function. An untimely dose of opium, besides blinding the unwary medical practitioner to the actual condition of his patient, may have a very unfavourable influence upon the mind of the sufferer himself. To illustrate this statement, I will call to your recollection a case of strangulated hernia, in the person of J. W—b, a patient, under my care, in Devonshire Ward, about three months ago. This man had been the subject of hernia for some years, and usually kept it reduced, but once or twice previously it had redescended for a few hours, but had occasioned no serious consequences. This time, however, the symptoms had been sufficiently urgent, and before I saw him, a dose of opium had been administered with the effect of relieving all pain, and of checking that functional derangement of the stomach (vomiting) upon which we place much reliance as an evidence of strangulation. He was so comfortable that he at first refused my aid altogether, and at length gave an unwilling consent that if the taxis under chloroform failed, I might use the knife. The operation disclosed a very tight stricture at the neck of the sac. The man recovered."

Mr. Maunder never uses opium before reduction, unless he has previously determined to effect reduction by operation in the course of a certain space of time, when the taxis, assisted by chloroform or warm bath, fails to do so. In regard to its usefulness after reduction, he thinks that it is almost always of great service in securing repose to the damaged bowel, but that it may do harm when feebleness in the patient disposes to accumulation of gases in the intestines, by disabling the muscular coat in its resistance to the distension; in that case he would omit the opium and give brandy; but we doubt whether the opium should be so entirely renounced, for with the feebleness there may be irritation that needs to be subdued with the tympanitis.

In an article by Dr. Little, containing "Notes of unsuccessful and successful cases of saline alcoholic injections into the veins for relief of collapse of malignant cholera," the notes of eight cases are given exactly as they were taken down at the time, and their fulness makes them valuable, because, with other similar accounts which we hope will be gathered of observations that have already been made, and of others to be made hereafter, they will enable us to come to a right conclusion in regard to the value of venous injections. From the temporary effects produced in cases that ended after all in death, and the manifest bearing of these effects on the final result in the successful cases, we cannot help hoping, with Dr. Little, that further trials—increasing, of course, knowledge and skill—will enable us to pronounce the measure to be very efficient in recovering patients thoroughly from the state of collapse. Dr. Little says, in relation to past trials:—

"When we take into consideration the difficulty of determining with any approach to accuracy, the proper density of the fluid to be introduced into the altered blood of cholera patients, without risk of the injury to blood-corpuscles, and possibly to other elements of the blood; the paucity of reliable analyses of the blood of cholera patients; the difficulty in making arrangements in private houses and temporary cholera hospitals, for due preparation of materials; the imperfection of the injecting apparatus employed, we may justly experience surprise at the number of recoveries which rewarded some operators, rather than at the number of deaths which sometimes succeeded the operation."

It may be, we would add, that the application of the remedy has often been made later than it should have been, as is often true of other extraordinary remedies in other diseases, and that this is the cause of its alleged

want of success. In Dr. Little's cases three of the eight were cured, and in three of the five cases that ended in death, the patients were pulseless when the injection was used.

It is of importance that the apparatus be properly arranged, and also properly managed. Dr. Little's apparatus is simple, and yet complete and excellent. A representation and full description of it are given. The composition of the fluid which he injected was as follows: Sodæ hydrochloratis ʒiij; sodæ sesquicarb. ℈ij; aquæ destill. ℥xx, carefully filtered, and subsequently heated. To each imperial pint (℥xx) immediately before injection, at temperature of 110° to 115° F., two drachms of alcohol were intimately mixed by stirring.

Two gold medals are annually awarded to students for general proficiency in medicine and surgery. The award is made not alone upon an estimate of the relative quality and amount of work done by the candidates in the wards as dressers, &c., but they are obliged to undergo an examination on clinical subjects, and furnish notes of at least six cases. The notes of twenty-two of these cases are given. We notice, in passing, one fault in some of them—the failure to state the amounts of some of the remedies administered. In all accounts of cases we think this point should be quite scrupulously attended to, but it is often neglected even by prominent men in the profession.

Among these reports we find three cases of dislocation of the femur on the dorsum of the ilium. The plan of reduction which it is said is "almost always adopted with success at this hospital," is thus described: "The pelvis was steadied; the leg flexed on the thigh; the thigh adducted and flexed on the abdomen; abduction was then commenced, and during this the head of the bone slipped into the socket." There is a remarkable resemblance in this to a description given of a reduction of the same dislocation, effected probably more than fifty years ago by Professor Nathan Smith, of New Haven. It is thus stated by his son, Professor N. R. Smith, of Baltimore: "After attempting the ordinary methods by extension in vain, he bent the leg upon the knee, seized the leg, and, using it as a lever, rotated the thigh a little outward. Then he gently abducted the thigh, and lastly flexed it freely on the pelvis, by carrying the knee toward the face of the patient. These movements instantly succeeded, and with but little effort of strength."

There is a short paper by Mr. Maunder, containing a description, with a plate, of a lithotrity syringe, which we commend to the notice of surgeons.

An account is given of a case in which gastrotomy was performed by Mr. Curling, for stricture of the œsophagus. Here was attempted to be done by design what was done accidentally in the famous case of Alexis St. Martin. But the circumstances of the two patients as to general condition were entirely different. St. Martin was in good health at the time of the accident; but the patient of Mr. Curling had suffered from the disease in the œsophagus for a long time, and had not only become much exhausted and emaciated for the want of nourishment, but his digestive organs had become thoroughly deranged. Then the operation was delayed till the exhaustion was so extreme that the skin was cold, and the pulse was exceedingly feeble and intermittent. He died in thirty-two hours after the operation, not from peritoneal inflammation, but from sheer exhaustion, as should have been expected as a matter of course. It was of no use to perform such an operation on a patient so utterly exhausted.

The same error is often committed in other diseases—as, for example, croup. We would not discourage resorting to an operation if there be the least ground of hope from it, where other means have failed; but we are decidedly opposed to such a measure when it does not offer even the shadow of a hope. It is not enough to say that the patient will surely die if it is not done. If he will surely die whether it be done or not, the surgeon has no right to do it. Some, perhaps, will think that there is no occasion for these remarks. We think that there is. There is a looseness in the ideas of some on the point in question. We have known operations to be performed where there was not the least ground for expecting relief from them. In many of the cases where a surgical operation is resorted to because the medical means have failed, it should have been resorted to before; and the reason that it was not done in time is commonly this: When the physician fairly comes to the conclusion that there is nothing more to be hoped from medical means, there is apt to be delay from various causes—as effecting due consultation, spreading the matter before the friends and before the patient, if he be an adult, &c.—and all this time the chances for affording relief by an operation are diminishing. The time to do it is when the conclusion above referred to is arrived at; and when the necessity for an operation is probable, arrangements should be made beforehand, so that if the necessity comes there may be no delay.

A very suggestive paper on "Marriages of consanguinity in relation to degeneration of race," is by Dr. J. Langdon H. Down, assistant physician to the hospital. It is a very prevalent opinion that such marriages are uniformly productive of evil to a greater or less extent. Dr. Down does not believe this to be true. His observations are quite extensive, his notes referring to 1138 cases of idiots. A strong point which he makes is, that there are other causes which are largely to be taken into the account. To illustrate this he gives some particulars of twenty cases of idiocy taken at random. His general conclusion is thus stated:—

"Consanguinity has doubtless the power of aggravating any morbid tendency, as I believe it has, of perfecting any good quality. Any statistics on the results of the marriage of relations are of doubtful value, unless they give the life-history of the progenitors. What a different aspect the whole matter assumes when this plan is adopted, will be apparent to the readers of this paper. Whenever a similar investigation is made, I believe it will be found, as in the subjects of my own inquiry, that consanguinity is only *one* of the factors, and not the most important one, in the production of deterioration.

"If our advice be sought, it will be our duty to inquire into other elements which are less on the surface, but which have equal or even greater potentiality for evil.

"Alliances, such as I have exhibited, with hereditary disease on both sides, should be discountenanced even where there is no element of consanguinity. It would only be a part of a true philosophy to render more forcible our opposition where blood-relationship would have a well-determined tendency to aggravate the wrong."

A similar opinion, derived from observations in the village of Batz, where marriage among near relations is of very frequent occurrence, has been given by Dr. Auguste Voisin, physician to the Bicêtre Hospital, Paris, a notice of whose book the reader will find in the January number of this Journal, p. 232.

Dr. Down also contributes a short paper on the ethnic classification of idiots. He does not go into the subject fully, but suggests enough to prompt farther investigation in that direction. He says that "a con-

siderable portion can be fairly referred to one of the great divisions of the human family other than the class from which they sprung." The Mongolian type he finds in more than ten per cent. of the cases. If he is strictly correct in his observations there is some truth in the following remarks with which he closed his paper:—

"Apart from the practical bearing of this attempt at an ethnic classification, considerable philosophical interest attaches to it. The tendency in the present day is to reject the opinion that the various races are merely varieties of the human family having a common origin, and to insist that climatic, or other influences, are insufficient to account for the different types of man. Here, however, we have examples of retrogression, or at all events, of departure from one type and the assumption of the characteristics of another. If these great racial divisions are fixed and definite, how comes it that disease is able to break down the barrier, and to simulate so closely the features of the members of another division? I cannot but think that the observations which I have recorded, are indications that the differences in the races are not specific but variable.

"These examples of the result of degeneracy among mankind, appear to me to furnish some arguments in favour of the unity of the human species."

In a lecture on cases of cerebral hemorrhage, by Dr. J. Hughlings Jackson, there are scattered through it some very sensible practical remarks on the values of different symptoms; the relations of this difficulty to disease in other quarters of the system; and the importance of recognizing fully the general condition of the patient. On this last point he thus remarks in relation to a patient, W. K.,[1] who is the chief subject of his lecture:—

"The patient I shall show you, at the close of this lecture, has, no doubt, for years been getting into a condition in which the vessels of his brain would readily give way. Frequently, however, our patients know nothing, or they think little, of the serious changes which render them liable to such accidents. Their tissues become so universally, and yet so slowly, lower in vitality, that there are no particular failures to obtrude themselves until something gives way, or until some part becomes inflamed. And when a patient comes to us for 'winter cough,' I fancy even we may think too much of his temporary bronchitis, as he is sure to do, and too little of his permanent emphysema. If he consult us for pneumonia or pleuritis, we must not think we have got to the bottom of the matter by saying he has taken cold. A patient's pleura is not a thing apart from him, but a piece of his body; and when we hear a friction murmur, we must not treat *it*—if I may say anything so grotesque—but the inflamed pleura, and the man of whom it is a part. It, doubtless, simplifies matters, in a superficial sense of the word simple, to know that there is lymph effused, and to think of mercury, and to try to get the lymph taken up. Just so, it is very loose talk, talking of treating hemiplegia, for hemiplegia is not a constant quantity. Yet, the man who thinks of hemiplegia as an entity, and gives what he has found 'good for hemiplegia,' will have a certain kind of satisfaction. But it makes one less confident in the treatment of diseases of the nervous system to define severely when we can, the internal changes on

[1] We have, in the account of this patient, a little insight into the drinking habits of the English. Thus Dr. Jackson says: "W. K. had, he said, been 'amongst beer all his life.' Yet, for a brewer's servant, he had been temperate. He had drunk only five pints of beer a day, and 'a chance drop of spirits now and then.' It may seem odd to call this great excess 'temperance;' but I speak comparatively. I have now under my care for epilepsy a young man, also a brewer's servant, who says he has been in the habit of drinking twelve pints of beer daily. A gallon a day is not a very uncommon allowance. He got his beer for nothing, and it rarely occurs to patients in this rank of life, or in one a little higher, that now and then fluids, which cost much, had better be poured down a drain than down their own throats."

which the outward symptoms depend. When we can, as it were, *see* a great brutal clot, or a large, irregular, yellow-stained cavity, in the motor tract, we are less hopeful."

Again he says:—

"It is wonderful how long bad materials will sometimes keep together. It may be, that although the patients are unsound, their general unsoundness is conservative. There is no healthy organ left to overwork the unhealthy ones. These patients descend into a lower sphere of vitality altogether—one which will do for routine work, for fair weather and for easy circumstances. The healthy human body, as Mr. Paget says, is fitted for the storms as well as for the calm of life. But patients like W. K. have no spare vitality, and, as I have said, are ready to give way under unusually unfavourable circumstances. They are ready to die at any point. A man with chronic Bright's disease may die of apoplexy, of bronchitis, of uræmia, of pericarditis, &c. &c., but to look on the pericarditis, apoplexy, &c., in such cases as idiopathic, as essentially different things, rather than as different events, depending on one general condition, would be to think, as those historians seem to think, who write history from the reigns of kings, from battles and other striking events. It would be as reasonable to consider the outbreak of the French revolution as idiopathic, as it would be to consider W. K.'s attack of cerebral hemorrhage as idiopathic."

These remarks are very timely. Since the introduction, to so large an extent, into pathological investigation of the means of discovering what is local in disease, there has often been an undue tendency to look at the local to the disregard of the general condition. It is agreeable to both physician and patient to find something definite. Not only is it satisfactory, but it saves thought thus to narrow observation. It is at the cost of mental labour that all the intricacies of the complications of disease are ferreted out, and the condition of the patient, as a whole, is arrived at. And farther than this, great damage is often done to the patient by the undue localizing of disease. For example, we have known many a patient to have a prolonged sickness with her mind fixed upon her diseased womb, when we have no doubt that she would have had a comparatively quick recovery if she could have had all idea of that organ blotted out of her brain. We would not be understood as decrying the use of the speculum, but only its abuse. While there are many cases in which undoubtedly the grand difficulty is a local one, situated in the uterus, there are many others where, with other local or general derangements, there may be some slight disease of this organ, wholly subordinate, and easily removed with very little direct treatment, or with even none at all, but indirectly by the removal of other difficulties. It is in these last cases that the error we refer to is committed. It would be interesting to illustrate the same point by reference to diseases in other quarters of the system—as the lungs and the heart—but this is not necessary. The illustration which we have given of the prevalent tendency to make too much of local disease, is at the present time, perhaps, more often met with than any other; and we may add, that it is found often connected with quackery, and with what is quite as bad, if not worse, semi-quackery.

In a paper by Dr. Fraser, on Delirium Tremens with a record of eight cases we find nothing new. We believe with him that "without the action of alcohol there can be no delirium tremens." Other forms of delirium may resemble this in some particulars, but there are always some clear points of diagnosis. No one ever ought to make a mistake here. We do not believe, as many teach, that this disease uniformly arises from an abstraction of the usual stimulus. As it is apt to occur in an exhausted condition,

as, for example, when the drunkard has been debilitated by sickness of any kind, so the exhaustion occasioned by the withdrawal of his stimulus may produce it; but it is by no means certain to do it, as the experience of jails and workhouses shows, and farther than this, the disease often comes on when there has been no letting down of the usual daily amount of stimulus. We do not at all agree then to this statement of Dr. Fraser.

"The point is whether the proximate cause is an excess of alcohol circulating in the blood, and acting lethally in the nerve centres; or from the deprivation of an accustomed stimulus, by which the tone of the nerve centres is morbidly lowered. This question is not one of theory merely; but also of treatment, as to whether stimulants are to be given, or withheld; for it is clear, that if an excess of alcohol is in the blood, instead of adding, we ought to eliminate; and, on the other hand, if the symptoms arise from a diminution of power in the nerve centres, owing to the absence of an accustomed stimulus, then alcohol will be the remedy."

This disease is not the result at all of alcohol now present in the circulation "acting lethally in the nerve centres;" neither does it arise simply "from a diminution of power in the nerve centres, owing to the absence of an accustomed stimulus." But it depends upon a peculiar condition of the nervous system induced by the continued irritation of alcohol. There may be nervous depression connected with it—there certainly often is—but we cannot say that it is essential to it. And as a matter of fact, some cases require stimulants, while others most generally do not. There is no one cure for the disease, and the most successful treatment is not that which follows any one mode, but which, proceeding upon general principles, accommodates itself to the varying conditions and complications that the disease presents. We distrust, therefore, all statements in praise of any one remedy or mode. We do not believe in large doses of digitalis, just now becoming quite fashionable. It may, for aught that we know, do as well as other exclusive modes, though we doubt it. In our experience, including the practice of other physicians as well as our own, delirium tremens is very apt to be recovered from, if it have no grave complications. We are not inclined, therefore, to resort to extraordinary means unless it can be distinctly proved that they are more successful than ordinary ones. Thus far we think that the most that has been proved in regard to digitalis is, that patients sick with delirium tremens sometimes are able to bear very large doses of it. But is it perfectly clear that some are not injured by it, as some have been by the large doses of opium, which, after the recommendation of Sutton, were some time ago administered so commonly by the profession at large? Digitalis was given in two of Dr. Fraser's cases—in one in which recovery occurred, but to what the recovery is to be attributed, Dr. Fraser is doubtful, because laudanum and chloroform were used as well as digitalis—and in the other, in which death resulted, the only medicine given being digitalis in large doses, and as the right side of the heart was found much dilated and the walls thinned, Dr. Fraser, inquires whether the effect of the digitalis was "too depressing upon an already weakened and dilated heart," in opposition to the doctrine that has lately been taught in regard to its action, which after all he thinks some facts favour.

There is a statistical report by Mr. Hutchinson, the surgeon to the hospital, of the deaths that occurred among his patients during the year 1865. The number of patients was 1,212, of which 81 died, a ratio of 6¾ per cent. After a general table, there are particular tables of classes with quite full items. There is also a complete table of the cases of strangulated hernia

for the year. There are also full classified statistics of all the major operations performed during the same year.

In a contribution by Mr. Hutchinson, on the results which follow injuries to nerve-trunks, there are full details given of seven cases. The observations were made some weeks after the injuries were inflicted, when in most of the cases the wound was healed. One very marked result was a remarkable loss of heat in the part which had lost sensation. The difference between the paralyzed and healthy parts, he found generally to be from six to ten degrees. It varied much with circumstances, because the temperature of paralyzed parts is very much at the mercy of external influences, the cold affecting them decidedly, while at the same time no applied warmth can raise them to the same temperature that it produces in the corresponding healthy parts. On the cause of this loss of heat Mr. Hutchinson thus remarks:—

"To what are we to attribute this remarkable loss of power to sustain the normal temperature, and to guard against the depressing effects of external cold? To say that it is the result of mere disuse is unsatisfactory, for we find it just as marked where one finger is contrasted with the others on the same hand, as when the whole hand is affected. One of my cases (Case I.) is almost crucial in this respect, for the man had but a finger and thumb, and used neither of them, yet the finger deprived of nerve influence registered ten degrees lower temperature than the thumb which yet enjoyed it. To allege that it is due to 'dilatation of the smaller arteries and consequent slowness of the circulation' is scarcely more satisfactory, since paralysis of the vaso-motor nerve, and consequent dilatation of the vessels, is well known to lead *to increase of temperature*. Yet it is quite certain that the capillary circulation is in some way greatly disturbed. If you chill the part it becomes not merely pale, but livid; if you warm it, it becomes not of a bright pink, flesh tint, but of a peculiar dull brick-red colour. The most plausible conjecture seems to be, not that the nerve-control over the vessels is at fault, but that the *vis a fronte* is itself much diminished."

He supposes, and we think with good reason, that there occurs a change in the endowments of the cells of the paralyzed part from the lack of nervous connection, and that there is in them less disposition to growth and nutrition, making the circulation to be less active, and so occasioning a loss of animal heat. This condition of things seems not only to permit inflammation to occur, but to predispose to it, so that circumstances readily produce it. A peculiar kind of whitlow appearing on the tips of the fingers, was quite common in cases of section of the nerves of the forearm, in one case coming simultaneously on four fingers, which of course could not be owing to any accidental cause, as some pressure. It is reasonable, therefore, also to conclude that the inflammation of the eye, so apt to occur in paralysis of the fifth nerve, the formation of bed-sores and the occurrence of cystitis in paraplegia, are not altogether owing to accidental influences, but come in part from the lesion of the nerves.

Following this is a very instructive article entitled "clinical and pathological facts in reference to injuries to the spinal column and its contents." From the cases of the past two or three years, a selection has been made of those which illustrate important points in diagnosis, treatment, or physiological influence, nineteen cases in all. "The cases of recovery have especially been collected, with the view of illustrating the important fact, that even in severe cases, with permanent local displacement, and with paraplegia lasting some weeks, complete recovery may ensue." The cases of recovery are ten in number, in some of them it being incomplete. "Many of the cases give important information as to the kind of displacement

which is most common, and its usual effects upon the cord, and illustrate clearly the inapplicability of operative interference. In no single case," it is added, "has any operation (other than attempts at reduction) been performed at this hospital."

In a lecture by Mr. Hutchinson, on the same subject, he urges very strongly this abstinence from operative interference. "My chief reason," he says, "is that, in operating, you convert a simple into a compound fracture, and add the risks of pyæmia, together with those of spinal meningitis. Then, I urge that depressions of bone very rarely exist, perhaps not once in twenty cases, and that it is utterly impossible to select the case." Again, he says, "My assertion is, that a good many cases recover, if put under favourable circumstances and let alone, and that of those which end in death very rarely, indeed, can it be asserted after *post-mortem* examination that an operation could by the barest possibility have done any good. In the great majority, then, since it could have done no good, its effect would have been to increase the patient's sufferings, and aggravate his danger." In regard to the infrequency of depression, he supposes that when the accident is so severe as to crush the spinal cord, generally the bones have sprung back by their own elasticity and that of the intervertebral substance, or that the displacements have been remedied by the mere straightening of the neck and trunk, which common sense dictates as the first thing to be done, and that where neither or both of these suffice, the replacement is commonly impossible. He says, also, that although much has been said about large effusions of blood into the vertebral canal as a cause of paralysis, such effusions are, he believes, the rarest of occurrences, for he has "never seen any effusion to the extent of possible compression, and in the majority of cases there is little or none." On this point, he remarks:—

"The injury is a crush, and is not one at all likely to cause much bleeding. There are no large arteries to be injured. When you examine a specimen of fractured spine, you will find the muscles and soft parts externally much ecchymosed, there will be also a few small blood-clots adhering to the edges of the broken bones, but there will be little or no blood between the bone and the theca, and none at all in the thecal cavity. I speak of what is usual, and am well aware that exceptions may occur. The theca (dura mater) is very rarely torn, and often, on exposing it, you might imagine that the cord was not injured. Nay, even further than this, you find the pia mater of the cord entire and without ecchymosis, and only on slicing the cord through do you discover that its substance has been utterly smashed. I show you a sketch of a cord thus injured. You will see that the cord-substance, for nearly an inch and a half, is reddened by effused blood, and its substance broken into a diffluent pulp. Yet, in this instance, the pia mater was still entire."

There are many interesting points brought out in relation to the effects produced by injuries of the cord which we would like to notice if our limits would permit. We cannot forbear to quote a part of what is said of loss of sensation:—

"If paraplegia be imperfect, you will always find that the patient retains more sensation than motor power. Sometimes he will appear to have lost motion utterly, and to retain sensation almost perfectly. This difficulty, in extinguishing sensation, is observed, I believe, in all diseases and injuries, whether of the brain or the cord. To a considerable extent it is, perhaps, apparent rather than real. Sensation is merely passive, motion is active, and the latter probably requires a far more efficient condition of the nerve-apparatus than the former. With a partially crushed spinal cord we may easily suppose a patient unable to transmit the orders of his will through the damaged portion, whilst still a certain degree of passive sensation (requiring no exertion of his will) may remain.

Another source of fallacy is the difficulty of accurate observations. A man tells you, 'I cannot move my legs,' and you are unable to prove the contrary, though it is still possible that a very vigorous exertion of the will might be able to set certain muscles in action; in other words, that voluntary motion, although seemingly in abeyance, is not absolutely lost. The same patient tells you that he 'can feel well,' yet very probably, if you try accurate tests, such as the compasses,[1] or drawing a hair or a feather over the surface, you will find that his sensory function is very far from perfect. On account of our frequent neglect of such tests we are compelled to receive with much qualification, recorded statements as to 'perfect sensation' being retained after these accidents."

We quote also what Mr. Hutchinson says of the use of the catheter, as worthy of consideration, though we think that, at the least, he makes too much of the influence of it in producing cystitis. The tendency of the injury is, as he states, to produce the disease, and the question is, whether this tendency is more decided with the use of the catheter, or with the distension of the bladder consequent upon not using it—a question which can be settled only by a careful comparison of many cases, such as remains to be made by Mr. Hutchinson and others, who have large opportunities of observation in this class of accidents. The passage is as follows:—

"There is, I think, room for much doubt as to whether the usual practice of relieving the bladder by the catheter is judicious. In a few cases where the fracture is in a certain part of the lumbar region, the bladder is involved in hyperæsthesia, and the pain caused by its distension, necessitates interference. These, however, are very rare, and, in almost all cases, the bladder fills without causing any discomfort whatever, and when full runs over. After a few days it regains a certain amount of tone, and empties itself very frequently. At this stage we have troublesome incontinence, and but little retention. Now, if the catheter be used from the first, inflammation of the urethra and bladder is, I think, almost certain to occur, and the urine will become loaded with pus and mucus. I suspect that cystitis is, in some cases, one of the influences which brings about the patient's death by exhaustion. Not unfrequently ulcerations of the mucous membrane of the bladder occur. There is a specimen in the Museum of a bladder and rectum from a fractured spine case, in which a fistula passes from the membranous urethra into the rectum, no doubt, in connection with the use of catheters. Why should cystitis thus constantly follow the use of catheters? Seeing that there is no impediment to the introduction of instruments, that they give the patient no pain, and are used with the greatest ease, why should they produce so much more irritation than we usually observe when they are employed for other reasons? I think we must admit, that it is probable that the mucous membrane of the bladder, when paralyzed, is in a state specially prone to inflame, just as the eye is, after paralysis of the fifth nerve. The practical question before us is, whether to permit the retention to continue until overflow takes place, is less likely to cause this cystitis than is the use of instruments. My own experience has been in favour of non-interference, and I quite intend, in the future, to make a full trial of this plan."

There is an appendix to the volume made up of notes on the cholera epidemic of 1866. As soon as it broke out, arrangements were made by the staff of the hospital for 38 beds in one of its wards, but this accommodation proving inadequate after the lapse of a week, two other wards were added, containing each 50 beds, making in all 138 beds for the exclusive reception of cholera patients. The largest number, however, at any one time in the hospital was 114. The whole number treated from July 10th to August 30th was 509, the deaths being 281, or 54.9 per cent. No

[1] The æsthesiometer, devised, I believe, by Dr. Sieveking.

cases of diarrhœa, however severe, were included in this statement. The mortality decreased week by week, it being the first week 85 per cent., and the last week 37 per cent. The gradual diminution of the mortality is accounted for by the difference in the severity of the cases. At the outset of the epidemic, most of the patients were brought in in a state of extreme collapse. "This epidemic," says Dr. Fraser, "began suddenly, raged fiercely, culminated sharply, and declined rapidly, as cholera has hitherto generally done, fitly represented by an ascending angle of 45°, and descending by one of 95°."

We will not enter into the discussion of the question whether cholera is contagious in view of the facts stated in the reports contained in this appendix, for such discussion, properly carried out, should take in the consideration of a wide range of facts accurately gathered. No narrow view of even well-observed facts, much less those which have been carelessly observed, will settle the question. We will give but a single quotation in relation to this subject:—

"Some facts may be stated bearing on the question of contagion. At the height of the epidemic, upwards of one hundred persons were employed in the cholera wards; seven medical officers, five volunteer nurses, five sisters, eighty nurses, and five porters. None of the medical officers, volunteer nurses, or sisters, were attacked, and the porters enjoyed a like immunity. Of the nurses five contracted the disease, and of these four died. Three of those who died slept outside the hospital. In the laundry eleven women were employed in washing the linen, etc., from the cholera wards, and of this number, one was attacked and died. She was also a non-resident. As the mortality among laundresses is usually very large in a cholera epidemic, it would seem that the preventive measures adopted were not altogether ineffectual. No case of cholera occurred in the general wards of the hospital, although during the whole period of the epidemic, they contained their full number of cases, most of whom came from cholera localities."

The preventive measures referred to are those usually employed in the various modes of disinfecting, and these were employed very thoroughly.

Something is said of many of the remedies used in the treatment of cholera. Calomel is very decidedly recommended as having been found efficacious. Baths, at a temperature of from 98° to 104° F. were used with most marked effect in about 130 of the worst cases under the care of one of the physicians. The effects are thus described:—

"Cramps ceased, anxiety of mind vanished, pulse returned, or, if originally to be felt, increased in volume and frequency. Many who had before moaned or shouted incessantly with pain, began to converse upon indifferent subjects, or in many cases sank into a tranquil slumber. Often recovery appeared to be the direct consequence of the bath, the improvement being permanent; but in many more, removal from the bath became the signal for the return, more or less rapidly, of the former symptoms."

Dr. Little, whose report of the effect of saline and alcoholic injections into the veins in the epidemic of 1849 we have noticed in another part of this article, followed up this practice in the present epidemic. He used now another apparatus, of which he gives a figure, one advantage of which is, that the operation can be readily performed with it by a single person. He reports fifteen cases. We find nothing new in the results as compared with those realized in 1849. He says, in concluding his report:—

"I may state my conviction that a patient (if not too old, nor suffering from severe organic disease), however urgent may be his symptoms, if they have not been of too long duration, has, if injected with saline alcoholic fluid, a very good

prospect of recovery. Often it is also his only chance. This belief is shared in by those who have seen my cases. The patients, however, require careful watching, and if the pulse is going, immediate reinjection again and again is necessary. When a patient has been long pulseless, clots form in the heart, and, as I have seen, in two cases where injection was attempted, extend into the larger veins. In one case the fluid would not flow in, and only distended the veins of the arm injected. After death clots were found extending from the heart into the axillary vein. I have no doubt that in some of my earlier cases clots existed in the heart at the time of the injection. During the last three weeks many cases, not nearly so severe as those injected, have died; they have generally got over the collapse, but succumbed to the reactionary fever. Had those been injected, in all probability the event would have been different. The bad results, with this treatment, are due to the fact that it is often only employed when the patients are in *articulo mortis*, under the impression that the injection is dangerous. This it is certainly not."

This may be speaking too strongly, but it is our own conviction, that a measure which will restore the pulse when it is entirely gone, diffuse warmth throughout the cold body, disperse the livid hue, replace the whispering utterance with almost the voice of health, remove the cadaverous expression of the countenance, and relieve the cramps, the vomiting, and the thirst, is of considerable value, and should not be cast aside simply because it does not succeed in the majority of cases in which it is used. And this conviction is strengthened by reports of cases where the injection was used successively several times with the same results, the patient recovering apparently in consequence of this repetition of the remedy.

We have not noticed all the articles in this volume, but have selected those which contain points that would most interest the readers of this Journal. We thank the Medical and Surgical Staff of the London Hospital for this contribution to our science, and shall hereafter look for their annual volume with great interest. W. H.

ART. XV.—*The Transactions of the American Medical Association.* Instituted 1847. Vol. XVII. 8vo. pp. 713. Philadelphia, 1866.

THE *Transactions* before us, like those of former years, commence with the address of the presiding officer, who, at the present session, was Dr. D. Humphreys Storer, of Boston, Mass. Its theme is the practice of Specialities in Medicine. The question is one of great importance, and which, taken in all its bearings, is one not very easy of solution. Dr. S. treats it with the utmost candour and fairness. The question may be considered under two points of view. The first embraces the propriety of a course of medical education directed solely to the devotion of the pupil, subsequently, to the practice of some speciality—to the exclusive treatment of a particular class of diseases, or the diseases of a single organ or series of associated organs. Such an apology for medical education in the proper acceptation of the term should be unhesitatingly condemned. So closely are the pathological conditions of every portion of the organism related to each other—so powerfully does the abnormal state of one organ or set of organs influence the functions of many or of all the others, that, without an acquaintance with the general pathology and therapeutics of the entire living system, it is impossible to form a correct estimate of the special pathology and therapeutical management of the diseases of particular organs.

To the second point of view under which the question of speciality in medicine presents itself, there can be much less objection. We mean the devotion of time and talents, after a sufficiently prolonged attendance upon a liberal course of medical instruction, and graduating, to the especial study and treatment of such of the branches of his profession as may have for the individual a particular interest, or which from any circumstances may awaken an especial claim. To pursue such a course all have a perfect right, and there can be little doubt that when the attention of any one is directed somewhat exclusively to a single department of medical investigation, or to the careful clinical observation of a single disease, or class of diseases, a closer acquaintance will be acquired of the nature, causes, symptoms, and complications of the morbid conditions thus studied, and of the therapeutical management best adapted to relieve the suffering to which they give rise, to circumscribe their ravages, and conduct them to a favourable termination.

The dangers and abuses to which the toleration of specialities in the study and practice of medicine is liable to lead, are clearly pointed out by Dr. S. He would not, however, discountenance the specialist as such; he would not speak disparagingly of him; he would neither ridicule nor condemn him, but would cheerfully welcome as a co-laborer to our ranks every well-educated, honourable, honest physician, to whatever portion of our science he may devote his time and his talents. Every atom he can add to our stock of knowledge, every grain he can place upon the mound already raised should be appreciated and rejoiced in; and as long as his conduct shall prove him worthy of our esteem, so long may he claim and possess it.

The first of the scientific papers is one on the Relations which Electricity Sustains to the Causes of Disease. It was presented by Dr. S. Littell, of Philadelphia, and discussed at the last annual session of the Association, but was not fully prepared for publication until the meeting in 1866. Dr. L. assumes that it is to the morbific influence upon the living organism of certain electric conditions of the atmosphere in circumscribed districts or neighbourhoods, or throughout more or less widely-extended regions, that we are to look for the principal cause, if not the only one, of diseases of an endemic or epidemic character. The question, which is certainly one of the deepest interest and importance, particularly in our study of the etiology of very extensive classes of diseases, is very ingeniously argued by Dr. L. The correctness of the position he has assumed is not, however, satisfactorily demonstrated.

The theory advocated by Dr. L. is by no means a novel one. Electrical fluctuations have been assigned by not a few, and with more or less confidence, as the cause of certain maladies. Few attempts, however, have hitherto been made to show by argument and facts the ground upon which such assignment was made, nor has the electrical cause of disease been so fully developed, nor has it received so extended an application as is given to it in the report before us. As Dr. L. admits, "Much patient investigation, however, and careful induction will be required to remove all doubt, and secure its adoption by the profession."

The report of the Committee on Disinfectants (Drs. E. M. Hunt, A. N. Bell, and J. C. Smith) follows next. Of the main subject it discusses, and the several important questions therein involved, the report presents but a very general outline. The views presented by the Committee are in the main correct, but these are presented too much in the form of axioms to be received without argument. We are prepared to admit that "where

well-regulated heat and perfect ventilation can be secured, we are in possession of all needed disinfecting powers under usual, or, we should say, under all circumstances, especially if perfect cleanliness of room, bedding, clothing, and person be added, excepting perhaps where a number of diseased persons are crowded together. In the latter case, the only disinfectant to be depended on is the separation of the sick, and placing them in a pure, dry atmosphere of a proper temperature."

The Committee present a list, with a brief commentary, of the substances which they regard as worthy of a notice, more or less extended, as their tested merits or assumed value may demand. Many of these substances are adapted to furnish, doubtless, important aid as auxiliaries in the work of disinfection; others of them will be found, we suspect, to be rather deodorants than disinfectants, in the proper acceptation of the term. We are not prepared to admit what the Committee would seem desirous to inculcate, that to remove a disagreeable or disgusting odour is, in all cases, equivalent to destroying the agent or source of infection.

In a very short paper by Dr. B. F. Craig, the use of the Permanganate of Potassa is recommended "for the purification of water, especially during the prevalence of epidemic cholera."

An Apparatus for the Treatment of Fractured Patella is described by Dr. J. M. Boisnot. The principle involved in the use of this apparatus is not new, being that of holding the parts in juxtaposition, by drawing upon the upper fragment in such manner as to bring it down, while the lower is held steadily. The form of the splint is that of a double inclined plane. Such a splint, keeping the leg *slightly* flexed, causes the patella to remain above the anterior depression between the condyles of the femur. The broad concave surface of the upper portion of the splint forms a comfortable support for the thigh posteriorly, while it serves as a point for counter exertion. The same may be said of the lower portion of the splint in its relation to the leg, with the additional recommendation of its not pressing upon the heel or tendo Achillis. The upper fragment of the patella is drawn down by pieces of leather, with attachments of common cord, which pass over pulleys to rollers notched, and provided with a spring, so that they may not slip in winding. The splints are confined to the limb at each end, by a slip of ordinary three-inch bandage. The description of the instrument is deficient in clearness from the want of any pictorial illustration.

A report is presented by Dr. J. J. Woodward, on The Causes and Pathology of Pyæmia (Septæmia). All that Dr. W. has attempted in this report is to bring together a few considerations in connection with the literature of pyæma, to offer a brief summary of the leading explanations of the phenomena which have been propounded, and a criticism of the basis on which they rest, with a few hints on further explanation. The report concludes with a sketch of some of the more prominent forms of non-surgical pyæmia, especially uterine pyæmia, that of new-born infants, that originating in intestinal ulcers and other lesions of the portal system, and the so-called idiopathic or spontaneous pyæmia.

We regret that Dr. W. had not been able to command the time requisite to present a complete monograph on pyæmia, instead of being forced to limit himself simply to a sketch of what others have done with a view to determine its true pathology. From the hints thrown out in discussing its literature it is evident to us that he is prepared to advocate a pathology of pyæmia far in advance of that entertained by a majority of his contemporaries.

The next communication is on The Clamp Shield, an instrument designed to lessen certain surgical dangers, more particularly those of extirpation of the uterus by abdominal section, by Dr. H. R. Storer, of Boston. This instrument consists of two jaws like the cutting blades of a pair of large shears, with a serrated edge where they come in contact, of the breadth of half an inch at their centre, and gradually tapering at their outer edge towards both the ends. The upper end of one blade is elongated into an odontoid process, which passes through a corresponding socket in the other; the upper end of this process is curved outward, so that when the jaws are closed it tends to hold them in position. To the lower extremity of each jaw is attached, by a ball and socket joint, the blade of a pair of narrow forceps. The blades of the forceps are united by a clasp, the pivot rotating upon its axis so as to allow closure at any angle. To the lower end of the right blade of the forceps is hinged a rod with a screw, which passes through an opening in the opposite blade. A nut on the outside of this blade, working on the screw-like rod, is capable of exerting whatever amount of pressure may be deemed advisable.

Dr. S. sums up the grounds upon which the clamp shield is to facilitate the operation for removal of the uterus and to lessen its mortality as follows:—

"I. *As a Clamp.*—It lifts the uterus, so as to bring as much as possible of the cervix within its grasp. 2. It enucleates the portion to be divided from the surrounding tissues. 3. It aids and increases the action of the ecraseur, indirectly controlling or preventing hemorrhage, and thereby, also, 4. It lessens the number of ligatures necessary to be subsequently applied.

"II. *As a Shield.*—5. It protects the tissues beneath and around it from being lacerated. 6. It prevents outlying vessels from being unnecessarily divided. 7. It covers the bladder, the vagina, and the rectum, and so avoids the causation of increased shock, and in case this is recovered from, of increased subsequent danger.

"III. *In its twofold Capacity.*—8. It relieves the surgeon's mind during the operation from all fear of the dangers above indicated. 9. It enables him cheerfully and hopefully to undertake many doubtful or desperate cases from which he would otherwise shrink in dismay, or which he could not, in conscience, undertake; and, best of all, 10. It, for all these reasons, tends to increase the number of cases attempted to be cured, and to lessen the mortality of those in whom the cure may become realized."

The next paper is on The Intra-oral Method of Operations on the Lower Jaw, by Dr. Dewitt C. Enos, of New York. A short account is first given of the mode of operating within the mouth, then a brief history of the employment and success of this plan of operating; the paper closing with a view of the advantages by which it is recommended. These are the avoidance of an unsightly and perhaps irritable cicatrix. The better preservation of the normal shape of the jaw, not only causing less deformity, but rendering its usefulness in mastication greater, since its usual coaptation with the superior maxilla is maintained. The less liability to sudden asphyxia by the retraction and swallowing of the tongue during the operation, and by removing, also, the more formidable and chronic form of asphyxia alluded to by Bégin; the non-division of the facial vessels and nerves, consequently the less hemorrhage and the better preservation of facial innervation.

Next follows a report by George M. McGill, Assist. Surg. U. S. A., advocating the adoption of A Periosteum Flap in all amputations in the continuity of a limb.

Since January, 1863, Assistant Surgeon McGill has adopted this flap in

all his amputations in the continuity of bones. A flap of periosteum is outlined, raised, and adapted to the newly-cut bone surface. This flap intended to cover and unite with the newly-divided bone surface, as skin and superficial fascia are intended, in certain modes of amputation, to cover and unite with soft tissues; with this difference, however, that in a periosteal flap we have a homologous structure, to unite with the newly-cut surface of bone; while in the case of skin and fascia covering soft tissues, union is demanded of heterologous forms. Granting that *like* more readily unites with *like*, then where a periosteum flap is adopted and the newly-cut surface of the bone has not been killed by the too coarse teeth or the too rapid action of the saw, we are more likely to have union by the first intention. This *a priori* conclusion is sustained by the series of cases adduced by Assistant Surgeon McGill; for the details of which we must refer to the paper itself.

An interesting and instructive case of Paralysis of the Vocal Chords with Aphonia is related by Dr. J. SOLIS COHEN, of Philadelphia. The paralysis in this case was overcome by direct stimulation in a single operation, and the voice was restored at the same sitting by vocal gymnastics.

The Report on Vesical Calculi, by Dr. J. C. Hughes, of Iowa, is based upon a case in which lithotomy by the bilateral method was performed successfully four times, within a little more than five years in a patient aged, at the time of the first operation, 62 years. The patient is still active, in his 74th year, and enjoying comparatively good health. At the first operation two calculi were removed of the triple phosphate variety; at the second, one calculus; at the third, four calculi, one of which was located in the fundus of the bladder and encysted; at the fourth operation twelve calculi were extracted. Of the entire nineteen calculi accurate lithographic drawings are given, showing their respective shapes and sizes.

Dr. L. A. Sayre, of New York, relates a case of Luxation of the Femur into the Ischiatic Notch, of Nine Months' Standing, Reduced by Manipulation.

Dr. Alfred C. Post, of New York, describes an Instrument for Performing Lithotomy by a Bilateral Section of the Prostate, devised by him to secure the advantages of the gorget, and, at the same time, to guard against its inconveniences and dangers.

The instrument consists of two parts. 1st. A straight steel rod eleven inches in length; the distal half of which is cylindrical, and of the size of a No. 1 bougie, terminating in a rounded button of the size of a No. 5 bougie. The proximal half of the rod is a rectangular four-sided bar, whose diagonal corresponds with the diameter of a No. 5 bougie. The proximal end of the rod is furnished with a flat ivory handle, roughened on its sides to enable it to be held more securely. 2d. A silver canula of the size of a No. 10 bougie, and occupying one-half the length of the rod. The distal extremity of the canula is tapered off to the extent of three-quarters of an inch, so as to form a beak, which projects beyond the blades. Immediately behind this beak are two blades which are inserted into grooves on the sides of the canula, so as to be readily taken out and replaced. There are four sets of blades. The largest makes an incision into the neck of the bladder of about one inch and a half in width, and the smallest about three-quarters of an inch. The proximal extremity of the canula has a small ivory handle adapted to it, by means of which the canula is made to stick upon the rod. The end of the canula next to the handle is provided with a square mortice hole, by which it moves upon the rectangular bar.

The manner of operating with this instrument is as follows. The patient being placed and secured in the usual position, a grooved staff is passed through the urethra into the bladder and held firmly in its position by an assistant. A crescentic incision is then made through the perineum with its concavity towards the anus. The incision crosses the raphé of the perineum about an inch in front of the anus, its horns extending each side, midway between the anus and the tuberosities of the ischia. A free incision is now made into the membranous part of the urethra along the groove of the staff. The button at the extremity of the steel rod is then passed into the bladder, and the staff withdrawn. The surgeon then holds the handle of the rod with the thumb and index finger of the left hand, and the handle of the canula with the corresponding thumb and finger of the right hand. The canula is then pushed forward until the blades with which it is armed have penetrated the prostate, and the sense of the resistance has ceased, indicating that the blades have entered the cavity of the bladder; the canula is now retracted and then the whole instrument is withdrawn. Nothing remains but to introduce the forceps, seize and extract the stone.

"More than twenty years have elapsed," Dr. P. remarks, "since I introduced this instrument, and I have had occasion to employ it in a considerable number of cases. Experience has confirmed my opinion of its usefulness, and I have no hesitation in commending it to the profession as a means of diminishing the dangers of a formidable operation."

By the same gentleman a description is given of an original Instrument to Facilitate the Introduction of Insect Pins in Wounds of the Face and of other parts, where it is important to secure an accurate adaptation of the edges of the wound. The instrument consists of a needle two and a half inches long; its diameter corresponding with that of a very large darning needle, slightly curved to the extent of a quarter of an inch from its point, and having at its proximal extremity a small flat handle. The curved portion of the needle is flattened, and has cutting edges. Throughout the greater part of its length on the side corresponding with the convexity of the curve there is a groove. In using the instrument, the needle is passed through the edges of the wound in the position to be occupied by the pin, which latter is then slipped along the groove on the needle. By this means the most slender pin may be passed through the skin with perfect facility and without being bent out of shape. The needle being withdrawn the pin is secured by a thread wound upon it in the form of a figure eight, and its point is then removed by means of a cutting pliers.

The next report is from the Committee on Diphtheria as it has Occurred in the United States, by Dr. H. D. Holton, of Vermont. This report presents a very good history, though by no means a complete one, of the prevalence of diphtheria in different parts of this country. The remarks of its author on the pathology of the disease and his description of its most usual symptoms, march, and sequelæ, and his directions for its treatment, are in the main correct. We should differ from him, it is true, as to the contagious nature of diphtheria, and upon some other points of less importance. We would suggest to Dr. H. that there is too close an affinity between denuded cutaneous tissue and mucous tissue, to render the liability of the latter to diphtheritic deposition any argument to prove that those have fallen into error who believe that diphtheria is "a peculiar inflammation of the mucous membrane," into which always the membraniform exudation takes place.

The conclusions to which the reporter has arrived are thus summed up:—

"1. That diphtheria has occurred as an epidemic, from time to time, from the first settlement of this country. 2. That it is a distinct disease, and is not to be confounded with scarlatina or croup. 3. That it is particularly a disease of childhood, although it exempts no age. 4. That it is communicable to that degree that it is the duty of every physician to separate the infected from such as are well, particularly children. 5. That it is a disease primarily affecting the blood, consequently the treatment, to be effective, must be not local but general, and of such a nature as to eradicate or neutralize the poison. Such local treatment should, however, be used as will prevent the absorption of the fluid portions of the exudation. 6. That when the exudation has invaded the trachea, the only hope of saving the patient is in tracheotomy."

The report which follows On Spotted Fever, so called, by Dr. J. J. Levick, of Philadelphia, is one of the ablest and most complete of any comprised in the present volume of *Transactions*. The views of the author of the report in respect to the pathology of the disease and its relationship to cerebro-spinal meningitis seem to us to be borne out by all the facts that have been reported by different observers, from an early period in the present century, and of various and different localities. We prefer not to enter upon an analysis of Dr. L.'s report on the present occasion, as in an early number of the Journal we expect that this subject will be more fully discussed than it is possible for us to do on this occasion.

A paper is presented by Dr. A. Mason, of Massachusetts, on The Use of Aluminum as a Base for Artificial Teeth, as a Substitute for Gold and other Metals, and Red Vulcanite. It is a valuable contribution to mechanical dentistry.

A very sensible and suggestive report on The Etiological and Pathological Relations of Epidemic Erysipelas, Spotted Fever, and Diphtheria, was presented by Dr. N. S. Davis, of Chicago. When examined by a more extended series of observations than we at present possess, we have no doubt that the views shadowed forth in the present report will be found correct, and that the inquiry carefully carried out in respect to other diseases than those enumerated, a close relationship in the nature and causation of a more extended list of epidemic maladies will be found to exist than is now suspected.

A report was presented by Dr. H. R. Storer, of Boston, a delegate from the American Medical Association to the Association of Superintendents of Asylums for the Insane, at its session of 1865–66, and especially instructed to urge upon the latter body "the advantage of a more intimate union with the former, alike for the purposes of science and effectual practice." The delegate failed in the accomplishment of the main object of his mission. The report closes by urging the adoption by the Medical Association of the following resolutions:—

"1. That the Association recommend to the several medical and law schools of the country the establishment of an independent chair of medical jurisprudence, to be filled, if possible, by teachers who have studied both law and medicine. Attendance upon one full course of lectures from whom shall be deemed necessary before the medical degree is conferred.

"2. That while this Association regrets that the Association of Superintendents of American Asylums for the Insane has not yet thought fit to unite itself more closely with the representative body of American physicians, it still is of opinion that such union is for their mutual and reciprocal advantage, and that it ought to be effected without delay."

Dr. B. Haskell presents a comparatively short paper in continuance of the subject discussed by him in a communication read at the session of the

Association for 1865, in respect to the existence of independent sensitive and motor nerves; a doctrine which he has attempted to show is not an absolute truth. To learn fully the character of Dr. H.'s objections to the views of Bell, and the arguments upon which they are based, his entire paper, in connection with the communication formerly presented by him, must be read *in extenso*.

Health in Country and Cities, is the title of a communication presented by Dr. W. F. Thoms, of New York. It is illustrated by tables showing the death-rates, sickness-rates, etc. etc., in country and cities. The communication of Dr. T. is a very valuable contribution to the department of hygeine The question of the comparative health of cities and country is a very complex one, requiring for its settlement not only a long series of statistics, but a careful comparison of these statistics, with a long list of questions concerning the sanitary condition of different cities and the different parts of a city, and of the several tracts of country and rural districts from which the statistics are derived, with the extent, condition, character, and pursuits of the inhabitants of each.

The report of the Committee on Medical Literature was presented by Dr. Charles A. Lee, of New York. It is a well written and able paper, presenting a very fair exposition of the present condition and extent of the medical literature of the United States, and of the character and value of our medical periodicals. While he vindicates the general medical literature of our country in the face of the unjust criticisms to which it has been subjected, even in many of the annual reports of the Association; and admits whatever deficiencies it may be justly chargeable with, he still insists that whether we examine the medical literature of this country in reference to value of material or to excellence of style, to all, indeed, that goes to constitute true scientific authorship, our best American writers are about on a par with those who have treated similar subjects in Europe.

"We think," says the reporter, "we may safely say that the time is come when our medical students, as well as practitioners, may rely chiefly on our own writers for the professional instruction and information they need; and it is but an act of simple justice to our native authors to urge their writings upon the attention of physicians, as far better adapted for their wants, and far safer guides in the management of our diseases than any foreign works whatever."

The next report, from the Committee of Medical Ethics, is On Specialities, by Dr. Worthington Hooker, and is a very well written and sensible paper. The reporter takes ground in opposition to the exclusive study and practice of specialities, and his arguments have great force and are well worthy of consideration. Appended to it is a very brief minority report, by Dr. Henry I. Bowditch, in defence of such study and practice.

A very candid report was made by Dr. Charles S. Tripler, from the Committee on Rank in the Medical Department of the Army. The comfort and efficiency of the medical officers of the army and the good of the service generally, call loudly for the recognition of military rank in the members of the medical department of the army; and it is to be hoped that the subject which is now before our National Legislature will be disposed of without delay and in accordance with the wishes of the members of a portion of the military service, second in importance to neither of the others.

A communication on the subject of Patent Rights among Medical Men was presented by Drs. D. Prince and Thomas Antisell, in which is advocated the propriety of medical men securing to themselves by a patent, a profit from the use of any discovery or invention of theirs, whether a

medicine or a surgical instrument or apparatus, and proposes to rescind the rule in our code of ethics in respect to patents, which rule is declared to be "founded upon misconception of the subject of patent laws and rights." The reasoning in the report referred to is specious rather than sound, and would equally sustain the right of the medical man to deal in secret nostrums and to withhold from the profession generally the results of his own experience and observations, however important these may be as aids in the prophylaxis or management of disease.

Dr. Benjamin Lee, of Philadelphia, contributes a paper on The Correct Principles of Treatment for Angular Curvature of the Spine, in which is advocated the adoption of means by which the weight of the head may be so far removed from off the spinal column, that even commencing deformity may be arrested and future angulation of the spine guarded against, whilst sufficient time is allowed to conquer if it be possible, and in many it is, any disease of the vertebræ, from which angular curvature may result. We do not subscribe to the employment of the mechanical means suggested by Dr. L. for the prevention and correction of spinal curvature, indiscriminately in all cases of vertebral disease; we admit, however, the general correctness of the principles of treatment which he has laid down.

The volume closes with an Essay on Digitalin, its Chemical, Physiological, and Therapeutic Action, by Dr. Samuel R. Percy, of New York. To this essay was awarded the prize of the Association. The essay is a very elaborate one, and gives a very good account of digitalin—a neutral principle obtained from the leaves and seeds of digitalis; its chemical history—the process for obtaining it, its physical properties, and chemical tests and reagents; together with an account of its physiological action on inferior animals and on man; its therapeutic value and modus operandi.

Digitalin, in its medicinal action, controls and lessens the frequency of the heart's pulsations; in fuller doses it deranges the actions of the heart; in poisonous doses it paralyzes the heart, and causes death by syncope.

"It is a pure sedative, and has no narcotic action. Its depressing action is preceded by no stimulation, and the effects it produces upon the mind when given in large doses, causing dreams and hallucinations, is but a reflex action, a derangement of nervous influence."

In comparing the action of digitalin with other sedatives, we find that, unlike hydrocyanic acid, it does not paralyze the medulla oblongata and leave the heart beating after the brain ceases to act. "It produces no anæsthetic effect upon the nerves of the stomach, like creasote." It does not, like aconite, produce an increased secretion of saliva, or paralysis of the fauces, or anæsthesia of the peripheral nerves. Unlike conium, it produces no paralysis of the motor nerves; nor does it cause, like colchicum, purgation, nor congestion of the kidneys, nor increased secretion of uric acid. Unlike antimony, it does not diminish the amount of fibrin in the blood, and become in large doses tolerant, nor, like ipecacuanha, does it produce any great increased secretion from the stomach and lungs.

"I have not," remarks Dr. P., "been able to verify the diuretic action of digitalin when given in a state of health; when given where cardiac lesion and dropsical effusion are present, it is, as a whole, the best diuretic we possess. The nausea and vomiting that are sometimes seen when digitalin is freely given, is nothing but the derangement of the function of the vagus nerve. I have not seen that it acts as an irritant to the mucous membrane of the stomach or intestines, though Bouchardat mentions this pathological condition, but it must be remembered that he tried the œsophagus." D. F. C.

BIBLIOGRAPHICAL NOTICES.

ART. XVI.—*Reports of American Hospitals for the Insane:—*

1. *Of the Maine Insane Hospital, for the fiscal year* 1865–66.
2. *Of the Vermont Asylum, for the fiscal year* 1865–66.
3. *Of the State Hospital at Taunton, Mass., for the fiscal year* 1865–66.
4. *Of the Pennsylvania State Hospital, for the year* 1866.
5. *Of the Maryland Hospital, for the years* 1865 *and* 1866.
6. *Of the Asylum of North Carolina, for the fiscal years* 1864–65, *and* 1865–66.
7. *Of the Central Ohio Asylum, for the fiscal year* 1865–66.
8. *Of the Indiana Hospital, for the fiscal year* 1865–66.
9. *Of the Michigan Asylum, for the fiscal years* 1862–63, *and* 1863–64.
10. *Of the Wisconsin State Hospital, for the fiscal year* 1865–66.

1. THE new wing added to the *Maine Insane Hospital*, in 1865, was finished, internally, and occupied in 1866. The female department is thus considerably enlarged. According to the report now before us, "every dormitory in the male wards is occupied, and has been for the last four or five years, so that we have been obliged to refuse, for a time, more or less applicants every year. We actually need another wing for males more than ever before."

	Men.	Women.	Total.
Patients in the hospital Dec. 1, 1865, . .	143	134	277
Admitted in the course of the year, . .	75	60	135
Whole number, ...	218	194	412
Discharged, including deaths, . . .	85	51	136
Remaining Dec. 31, 1866, ...	133	143	276
Of those discharged, there were cured, .	39	22	61
Died, ...	18	15	33

Died of consumption, 10; diarrhœa, 5; old age, 4; congestion of the brain, 3; paresis, 3; epilepsy, 4; exhaustive mania, 1; dropsy, 1; suicide, 2.

"Every year we spend with those of minds diseased," remarks Dr. Harlow, "leads us more fully to the conviction that greater care and watchfulness over the physical part of our nature would lessen surprisingly the number who annually fall victims to this worst of human ills. The rules of hygiene are so wofully neglected and disregarded by all classes and in all conditions of men, that it is no marvel to see the vast number of wrecks afloat on all sides.

"The conventionalities of society are but stepping-stones over which the young scramble to find themselves too soon in some institution for the insane, or at the brink of an early grave."

A large part of the report is occupied by an essay upon suicide, which contains nothing of particular importance that is new.

2. The report of Dr. ROCKWELL, of the *Vermont Asylum*, for the official year ending July 31, 1866, is, like all its predecessors, very short. We take from it a few extracts:—

	Men.	Women.	Total.
Patients at the beginning of the year, . .	241	239	480
Admitted in the course of the year, . .	77	84	161
Whole number, ...	318	323	641
Discharged, including deaths, . . .	77	71	148
Remaining at the end of the year, . .	241	252	493
Of those discharged, there were cured, ...			58
Died, ...			43

"The comfort and welfare of the patients are greatly affected by the character of those under whom they are immediately placed. If the attendants are of a benevolent and obliging disposition, industrious in their habits, mild, yet decisive in their manners, and possessing a favourable and pleasant tact to perform their several duties, they will greatly relieve the labours of the physician, and promote the recovery of the patients. Those who are mild, amiable, and courteous, will impart the same feelings to those around them; while those who are morose and irritable will create a gloomy and unpleasant atmosphere to all with whom they come in contact.

"One of the most important means for the restoration of the insane is to inspire them with self-respect and self-control. The kindness, tact, and skill for the accomplishment of this, is a great desideratum in the moral management of the insane. Reading and writing are considered valuable auxiliaries for the comfort and restoration of the insane. The patients are furnished with stationery, and are encouraged to write on all subjects except that of their insanity. The practice of writing improves the power of fixing the attention, and tends to restore the lost balance by diverting the mind from its delusions, and calling into exercise those faculties that would otherwise lie dormant. Even when they write on the subject of their delusions, they disclose the nature of their insanity more clearly than could be learned in any other way."

3. The medical history of the *State Lunatic Hospital* at Taunton, Mass., for the official year ending with the 30th of September, 1866, furnishes the following numerical results:—

	Men.	Women.	Total.
Patients in hospital Sept. 30, 1865, . .	165	178	343
Admitted in course of the year, . . .	109	99	208
Whole number, ...	274	277	551
Discharged, including deaths, . . .	111	99	210
Remaining, Sept. 30, 1866, . . .	163	178	341
Of those discharged, there were cured, .	39	39	78
Died, ...	23	17	40

Causes of death.—General paralysis, 8; maniacal exhaustion, 6; apoplexy, 5; phthisis, 3; old age, 3; diarrhœa, 2; marasmus, 2; epilepsy, 2; inanition, 2; paralysis, dysentery, disease of the heart, disease of liver, suicide, and cancer, 1 each.

Dr. CHOATE writes as follows in relation to the liability to recurrence of insanity, in cases once restored: "While it is true that its occurrence once in an individual indicates, in many cases, a constitution which makes him more liable in the future than one who has never been attacked—and while there are a few who, though apparently perfectly rational after the termination of their disorder, are incapable of returning to the sphere which they formerly occupied, or of performing the duties which they previously fulfilled, yet the large majority of those recovered continue well, and are as perfect and capable, in all respects, as before their disease. To show how small is the probability of recurrence, and how much the danger of it has been overrated, I have compiled from our records the following statement of the number of times each patient has been admitted:—

2488	patients have been admitted		*once*, ...		2488
86	"	"	*twice*, ...		172
35	"	"	*three times*, . . .		105
13	"	"	*four* " . . .		52
3	"	"	*five* " . . .		15
2	"	"	*six* " . . .		12
1	"	"	*eight* " . . .		8
2628	*persons.*			*admissions,*	2852

"It is not pretended that this statement shows accurately the number of relapses; but it must be remembered that it includes many who are removed

by friends before recovery, and were necessarily returned. On the whole it seems probable that it puts fully as unfavourable an aspect upon the security of the restored insane as the facts would warrant."

The Doctor thus gives his views of the effect of the late war in the production of insanity:—

"At the commencement of the late rebellion, contrary to common expectation, there was an immediate and general check to the numbers thronging to all public institutions, and to insane hospitals among the rest. This continued throughout the war; but with its cessation there has been here, and probably at other similar institutions, an immediate though gradual increase. A few, but not many patients, have been admitted, in whom the mental disease might fairly be attributed to their connection with the great contest. Eleven of those admitted during the year had served in the armies of the Republic. On the whole, it seems probable that the general effect of the national trial has been healthful to the public mind, and that although some new causes of mental disease have been introduced, yet the percentage of insanity has been slightly reduced."

4. At the *Pennsylvania State Hospital*, during the year 1866, the number of patients constantly exceeded the limit which was originally fixed for the building. As a remedy for this tendency to overcrowding, Dr. Curwen very wisely recommends the erection of another hospital, instead of enlarging this to unwieldy dimensions. His reasons for this course are thus stated:—

"The opinions of the ablest and most experienced gentlemen, who have devoted most time to the study of mental disorders, are most decidedly opposed to the erection of hospitals to accommodate a larger number than this is calculated to receive. No man, no matter how great his ability, can give proper, careful, and thorough attention to a larger number, and also perform, as he should, all the other duties which require his personal care. To secure the best results, the superintending physician must personally study the different cases, and make himself familiar with them; and to do this, maintain the proper discipline of the establishment, and faithfully discharge all the duties assigned him, will fully tax the energies and resources of the best man; and every additional patient only detracts so much from his ability rightly to discharge his duties; and in justice to himself and to those intrusted to his care, these duties cannot be delegated to others. He should see with his own eyes and hear with his own ears, that thus he may take advantage of everything which may most tend to benefit those intrusted to his care."

He advises, however, that a room for an infirmary be erected in connection with each ward of the present hospital. This is an excellent proposition, and the proposed rooms would be a great improvement.

On the supposition that a new hospital shall be erected, the Doctor gives the following injunctions, a due regard to which would be the part of a wise economy. In the hospitals of the United States, hundreds of thousands of dollars have been expended in correcting the errors and supplying the deficiencies of ignorant architects and master-builders:—

"The edifice itself should be constructed in the most careful manner, in strict accordance with the requirements of the class to be accommodated, and in the light of the ample knowledge obtained on this subject within the last ten or fifteen years, under the direct superintendence of a well qualified medical man, who has had previous experience in a hospital for the insane, and who may be able to conduct it after it is ready for occupation. In this way much expense may be saved in the construction and arrangement of matters of vital importance to the proper management of the hospital, but which cannot be known to an architect or builder, who has had no opportunity of giving special attention to such matters. Every one desiring to have any work done in the best manner, will select for it the most careful and competent workman he can find; and so in this matter of hospital building, the man best acquainted with the requirements of a hospital for the insane, should prepare the plans, direct its erection, and be responsible for the proper arrangement of all its parts."

	Men.	Women.	Total.
Patients in hospital Jan. 1, 1866,	157	149	306
Admitted in course of the year,	115	72	187
Whole number,	272	221	493
Discharged, including deaths,	91	75	166
Remaining Dec. 31, 1866,	181	146	327
Of those discharged, there were cured,	26	21	47
Died,	14	19	33

Causes of death.—Exhaustion of acute mania, 9; exhaustion of chronic mania, 13; suicide, 1; congestion of the lungs, 2; phthisis pulmonalis, 2; disease of the heart, 2; asphyxia, 1; disease of the brain, inducing paralysis, 3.

5. The general statistics of the *Maryland Hospital*, for the years 1865 and 1866, are as follows:—

	Men.	Women.	Total.
In hospital Jan. 1, 1865,	63	57	120
Admitted in 1865, including 65 cases of mania-a-potu,	108	25	133
Admitted in 1866, including 51 cases of mania-a-potu,	94	27	121
Whole number in the two years,	265	109	374
Discharged, including deaths, in 1865,	102	29	131
Discharged, including deaths, in 1866,	102	40	142
Whole number discharged,	204	69	273
Remaining Dec. 31, 1866,	61	40	101
Cured in 1865, including 59 of mania-a-potu,	76	11	86
Cured in 1866, including 52 of mania-a-potu,	67	10	77
Died in 1865, including 2 men with mania-a-potu,	9	2	11
Died in 1866, including 1 case of mania-a-potu,	6	3	9

"There has not been," says Dr. FONERDEN, "at any time in the last twenty years, a prevalent febrile, contagious, or inflammatory disease in the hospital. The physical health of the older inmates in the last two years, excepting those with whom it was broken down when they were admitted, or became so after a slow process of deterioration in the vital functions, has been, in general, good.

"The same course of moral, medicinal, and hygienic management which has been heretofore pursued, with the addition of such advantages as longer experience has contributed, remains in daily operation; and a continued supervision is exercised over the details in the proceedings of the household, to promote its welfare, mentally and physically.

"Among the improvements which have of late years been made, none has surpassed in value the introduction of the new heating apparatus by means of the circulation of hot water in pipes, permanently arranged throughout the main building."

6. The general numerical results at the *Insane Asylum of North Carolina*, for the two official years, the latter of which ended with the end of October, 1866, are as follows:—

	Men.	Women.	Total.
Patients in hospital, Nov. 1, 1864,	96	84	180
Admitted in two years,	61	46	107
Whole number,	157	130	287
Discharged, including deaths,	75	46	121
Remaining, Nov. 1, 1866,	82	83[1]	165
Of those discharged, there were cured,	15	7	22
Died,	32	27	59

Of the patients admitted, the mental disease of one is attributed to the "John Brown raid," and of seventeen to "the war."

"Of the admissions during the year, eleven were of ten years' duration;

[1] As in the report.

seventeen were of five years' duration; nine were of two years' duration; eight were of one year's duration; five unknown; fifteen were of less than one year—making a total of fifty whose ascertained and unknown duration is more than one year. Seventy-four per cent. of chronic cases of total admissions, from which it appears that the Institution continues to be, as it always has been, the recipient of a large number of unfavourable cases, and of persons whose physical systems and energies have become greatly enervated, if not materially exhausted, by mental and bodily ailments.

"A reply to the inquiry why such a large number of chronic cases were sent to the Institution in the past year, may be found partly in the impoverished condition of the families to which many of them belong, and who find themselves unable to take farther care of them, and partly in others having overcome a groundless prejudice against such Institutions, as well as a false sense of apprehended disgrace on the part of relatives and friends, from placing their unfortunate ones in institutions of the kind.

"Since it has been made known to the authorities of the Freedmen's Bureau of a readiness on the part of the Board of Supervisors to admit coloured insane into the Institution, a number of applications for patients of that class have been made, but which have been rejected for the want of apartments."

Dr. Fisher's report is mostly devoted to the material and financial interests of the hospital.

7. Very extensive repairs and improvements of the buildings of the *Central Ohio Lunatic Asylum* were made in the course of the official year ending with the 31st of October, 1866. An "Infirmary for infectious diseases—a plain, substantial brick building, conveniently arranged for both sexes, and well ventilated, is rapidly approaching completion."

	Men.	Women.	Total.
Patients in hospital Nov. 1, 1865, . .	134	145	279
Admitted in course of the year, . . .	82	105	187
Whole number, ...	216	250	466
Discharged, including deaths, . . .	79	87	166
Remaining Nov. 1, 1866, ...	137	163	300
Of those discharged, there were cured, .	51	58	109
Died, ...	9	11	20

Causes of death.—Acute maniacal exhaustion, 8; exhaustion and general decay, 3; organic lesions of the brain, 2; marasmus, 2; consumption, inflammation of the lungs, inanition, dropsy, and peritonitis, 1 each.

"We have had no epidemic influence with which to contend, and hence the moderate list of the deceased."

The large proportion of cures is accounted for by the fact, that in the admission of patients, preference is given to recent cases.

"Of the many new remedies," says Dr. PECK, "that are attracting attention at the present time, I can speak favourably of the following: The tincture of digitalis is a valuable medicine in the treatment of paroxysmal insanity, attended with a high degree of excitement. It has been used quite extensively during the past year in this Institution, with very decided and satisfactory results, and not a single *unpleasant symptom* has occurred from its use in any case. The dose we vary from twenty drops to two drachms of the officinal tincture. My experience in the use of this remedy leads me to state that, to obtain desirable results, it should be given in rather large doses.

"Another remedy of value I find in the bromide of potassium. It is indicated in nervous disorder, accompanied with spasmodic phenomena. Its use in this Asylum is becoming more and more extended daily; but the class of patients for whom it seems of the most uniform value is the young of both sexes, whose mental alienation has been caused by disorder of the organs of generation.

"The permanganate of potassa is a medicine of considerable value in the treatment of gastric disorder. Cases of melancholia are very frequently attended

with troublesome dyspeptic symptoms. In cases of this kind this remedy is usually of real service."

The tincture of digitalis can hardly be called a "new remedy" in the treatment of insanity. Twenty-five years ago there was, perhaps, no one medicine which was more extensively used in the hospital for the insane with which we were at that time connected, than this same tincture.

8. At the *Indiana Hospital for the Insane*, for the last ten years, the demand for accommodations has far exceeded the supply. In the course of the official year ending October 31, 1866, the number of rejected applicants was seventy-eight. There is now some prospect that the building will be enlarged.

	Men.	Women.	Total.
Patients in hospital Oct. 31, 1865, . .	127	135	262
Admitted in course of the year . . .	133	108	241
Whole number, ...	260	243	503
Discharged, including deaths, . . .	127	103	230
Remaining Oct. 31, 1866, ...	133	140	273
Of the discharged, there were cured, . .	69	54	123
Died, ...	15	9	24

Causes of death.—Exhaustion from acute mania, 10; exhaustion from chronic mania, 3; puerperal mania, 1; marasmus, 5; general paralysis, 2; convulsions, 2; suicide, by strangulation, 1.

The hospital is so far from being adequate to the treatment of all the patients for whom admission is requested, that, during the past year, all chronic cases were rejected, and recent ones alone received. Hence the number of curables was largely augmented, and, as a natural consequence, the percentage of cures very considerably increased beyond that of the general average of hospitals for the insane.

"The ill-health," says Dr. LOCKHART, "so often recorded on admitting patients to the hospital, is too often continuous. Indigestion and anæmia, with our insane, are general, if not quite universal. Hereditary and climatic (malarious) influences; ignorance of, or disregard for the laws of health—as the use of improper food, or the abuse of articles in themselves wholesome; excessive toil, or the want of exercise; intemperance, with its long catalogue of ills, physical, moral, mental; and *loss of sleep*, whether from domestic affliction or discord; a restless desire for gain, or the multitudinous excesses and indulgences of the young and the vicious, seeking for pleasure where it never has been found; or from whatever other cause 'nature's sweet restorer, balmy sleep,' is wanting—these all play their part in making up the sum total of diseased bodies and diseased brains. No cases, however, are so lamentable as those of the young, who have exhausted body and mind in rounds of senseless pleasure—the late, highly seasoned, needless suppers—the convivial glass, the white-heat of excitement at the play and the gaming-table: the midnight revel; the feverish, salacious dreams, and yet more salacious indulgences, until at last life is exhaled, and the miserable wretch lingers for a few months in an asylum, *demented*, and death closes the scene."

9. By the report of the *Michigan Asylum for the Insane*, for the two official years next preceding the 1st of December, 1864, it appears that in the course of those two years the central edifice of that Institution was completed and occupied.

	Men.	Women.	Total.
Patients in hospital Nov. 30, 1862, . .	58	97	155
Admitted in the course of two years, . .	72	73	145
Whole number, ...	130	170	300
Discharged, including deaths, . . .	55	81	136
Remaining Nov. 30, 1864, ...	75	89	164
Of those discharged, there were cured, .	28	30	58
Died, ...	5	11	16

Dr. VAN DEUSEN, in this report, exhibits, in various ways, the importance of completing the building according to its original design, in order to meet the wants of the people of the State. In respect to moral treatment, he says:—

"In addition to the means previously in use for the physical and mental recreation and diversion of our household, there has been added, since the issue of our last report, a valuable stereoscopticon, with an oxyhydrogen light, manufactured by Queen & Co., of Philadelphia, and a large collection of choice slides. This apparatus will continue to furnish, at a small additional yearly expense, a source of most elegant and refined entertainment. One exhibition, of two hours' length, was attended by nearly all the patients from one of the most disturbed wards; and a quieter, or more pleased attendance could not have been secured anywhere.

"We have also provided for each of the convalescent halls, *pigeon-hole boards*, which have been in such constant use, and have afforded so much pleasure, that we shall endeavour to introduce them elsewhere.

"A very pleasant incident in the history of the past year was a reunion of recovered patients, during the holidays. Nearly every available space in the house being already occupied, the number of invitations extended was necessarily very limited, but the occasion was one long to be remembered."

10. At the *Wisconsin State Hospital for the Insane*, as appears by the report of that Institution for the year ending September 30, 1866, an enlargement of the building is in progress, by which the accommodations for patients will be doubled.

	Men.	Women.	Total.
Patients at the beginning of the year,	89	88	177
Admitted in the course of the year,	57	38	95
Whole number,	146	126	272
Discharged, including deaths,	50	42	92
Remaining at the end of the year,	96	84	180
Of those discharged, there were cured,			42
Died,			7

Deaths from exhaustion, 4; diabetes, 1; general paralysis, 2.

Dr. VAN NORSTRAND thus presents his views in regard to manual labour, as adapted to the treatment of the insane:—

"A patient under recent excitement should not labour, but when convalescence has commenced, if in tolerable physical condition, he should commence light labour, and gradually increase it to a moderate amount, always considering his physical condition. All chronic cases, if not physically disabled, are improved by out-door exercise or labour—appetite and sleep are better; they are more manageable and docile, less filthy in their habits, much more agreeable generally, always improving physically, and many times mentally, to a certain extent. The labour should be agricultural, the simpler the better, and not exhaustive. Mechanical shop-labour I should rather avoid; the patient is more excluded from fresh air, the life-giving influence of sunlight—is more exhaustive to the mental energies, has more opportunity to injure himself or others with tools, and may secrete them in his clothes, and allow other patients who are suicidal or homicidal to use them. For these reasons, together with the fact that an insane man learns a new pursuit with much difficulty, I have been inclined to provide all the patients, who felt disposed to labour, with agricultural or horticultural employment, unless they manifested much aptitude for some other pursuit. Females, of course, have not worked out of doors, except in the flower-garden, their labour being done mostly in the sewing-room, wards, dining-rooms, kitchen, laundry, ironing-rooms, &c."

It appears that the farm is made a valuable appendage to this hospital.

P. E.

ART. XVII.—*Guy's Hospital Reports.* Edited by C. HILTON FAGGE, M. D., and ARTHUR E. DURHAM. Third series, vol. xii. London: John Churchill & Sons, 1866. 8vo. pp. 683.

THE present volume of this valuable publication contains twenty-five original contributions, eleven plates and a number of wood-cuts. As has been our practice, we shall lay before our readers a full analysis of its contents:—

I. *On Hydrophobia.* By J. COOPER FORSTER.

In this paper the histories of seven cases of hydrophobia are related which, with six cases mentioned by Dr. Bright in his work entitled *Medical Reports*, as having been admitted into Guy's Hospital in the decade from 1820 to 1830, lead to some interesting observations concerning this strange disease.

The first point is the question, How long after the bite may hydrophobia occur? In the thirteen cases, the shortest time that elapsed was four weeks, and the longest—in one case only—five to seven years; the other eleven all took place at various periods within eleven months. Here we have the results of a poison apparently more tardy in its action than any other to the action of which the human body is subject. Moreover, when the disease appeared early, the bitten part was situated in the most vascular and sensitive region of the body, where the circulation is most active, and where absorption might naturally be expected to take place most rapidly. When clothing has intervened, a long time, even some years, may elapse before the disease occurs.

Some may be disposed to think that when hydrophobia appears several years after the occurrence of a bite, it can scarcely be considered to be owing to the wound then inflicted. The only solution of the difficulty is that hydrophobia may occur spontaneously, which Mr. Forster cannot adopt.

By some writers a change is said to occur in the original wound previous to the appearance of the hydrophobic symptoms. Indeed, in the article on Hydrophobia by Messrs. Gamgee, in Reynolds's *System of Medicine*, the wound is said to "become intensely painful." "If the wound have cicatrized, the cicatrix becomes red and irritable; or if, as is generally the case when the injuries inflicted by the rabid animal have been severe, it has not healed, it assumes an unhealthy appearance." In none of the cases detailed by Mr. Forster was there the slightest alteration in the wounds. In those of Dr. Bright it is stated, in one case, "that the scar of the bite was evidently inflamed."

That there has sometimes been great pain in the course of the nerves leading from the injured part there is no doubt. Indeed, this appears to be one of the most marked symptoms of the onset of the disease, and one which first attracts attention. This pain is along the course of the nerves, and not along the track of the absorbents, as there is no enlargement of the glands or lymphatics at all indicative of any irritation.

The characteristic difficulty in swallowing is not a dread of fluid, but an inability to perform the act of swallowing when the liquid is taken into the mouth. In all the cases the patient took the glass, or mug, or spoon, and earnestly wished to swallow the liquid, but found it impossible, apparently owing to an irregular contraction of the muscles of the pharynx. It is Mr. Forster's belief that this peculiar inability to swallow, and the excessive pain leading from the wound are symptoms sufficient to characterize hydrophobia without any other.

Upon a careful examination of all the post-mortem appearances related, there seems to be no special organ that claims particular attention. An enlarged condition of the pharynx, which is now generally admitted to be dilated in this disease, is noticed, but whether this condition is cause or effect appears very difficult to decide.

As regards the treatment of hydrophobia, there is nothing in these cases to afford a shadow of encouragement to hope for success from any known means whatever. Excision of the bitten parts, which some consider as a tolerably certain means of preventing hydrophobia, Mr. Forster pronounces to be vain. In the only case he reports where it was practised, the disease appeared in four

weeks. "Excision or non-excision is alike in vain; sooner or later the disease appears!" Nothing, so far as we know at present, can prevent it.

II. *The Teeth, as Passive Organs of Speech.* By S. James A. Salter, M. B., F. R. S.

Articular sounds are essentially produced by the passage of air through the oral canal. By the soft palate, the front teeth and the gums just behind them, and the lips, certain characters are impressed upon the air passing through them. In this paper is considered the effect produced upon the air by the teeth. The principal way in which the teeth assist in the production of articular sounds is by acting as an arch, or horseshoe-shaped ridge, within which and against which the tongue may act as a valve, and by pressing against which it may produce modified and variously placed partial or complete closure. Mr. Salter analyzes particularly and in order the way in which all the dental sounds are formed. Now the loss or injury of any of the passive organs of speech produces a corresponding defect in the articulation of the sufferer; and if the teeth are the organs effected, then the dental sounds are interrupted or interfered with. This is always most manifest immediately after the loss has taken place, for by degrees this loss is compensated for, to a certain extent, by the adaptation of the soft parts, and the cultivated skill of the speaker.

III. *On the Application of Physiological Tests for Certain Organic Poisons, and especially Digitaline.* By C. Hilton Fagge, M. D., and Thomas Stevenson, M. D.

In this long paper are furnished the details of a number of experimental investigations made for the purpose of determining whether digitaline can, with certainty, be detected by its effects upon the lower animals, but the conclusions, to our minds at least, are by no means very satisfactory.

IV. *Observations on the Pathology of some of the Diseases of the Nervous System.* By Samuel Wilks, M. D.

The object of this paper is to endeavour to find some scientific basis for a classification of nervous diseases, so that the organic affections, at least, might be arranged on a definite principle. A physiological method of classification of cerebral affections is certainly better than one strictly pathological, but the discovery of the connection between particular symptoms and definite nervous lesions is of the utmost importance in a clinical sense, and of the extremest interest from a physiological point of view. It must be theoretically true that alterations in particular parts of the nervous structures are attended by definite and certain symptoms; and, practically, it must be equally true, could such lesions exist as results of disease, corresponding phenomena must occur.

The physiological study of nervous disease is a new pursuit; in our text-books we find scarcely an attempt to place nervous diseases on a scientific basis, and in no direction is more to be discovered and more to be gained. Our knowledge of the physiology of the nervous system has depended in part upon experiments upon animals, in part upon the experiments made for us in the human body by disease. Among the experiments which have afforded the best results have been those on the spinal cord and the nerves; as regards the brain, the results obtained by the study of diseased states are more reliable than those derived from vivisection or direct experiment.

In this paper is given the connections that exist between particular affections and diseased states of the nerve centres. The whole number of original cases given by Dr. Wilks is seventy-nine. Some generally correct conclusions, at least, to the best of our judgment, are arrived at, and a method of framing a scientific classification of nervous diseases is approached.

The spinal cord and the two large ganglia at its summit, in the brain, contain the working power of the body; while the cerebral hemispheres have the power of control, and are also the seat of the intellectual operations and of the consciousness and will. The whole working of the machinery of the body, unless under morbid conditions, is performed without the exercise of will or feeling on our part, and in all probability it is true also that processes of intellect may be carried on in the cerebral hemispheres without our direct knowledge

or consciousness. There is every reason to believe that sensory impressions may be conveyed beyond the ganglia at the summit of the cord to the cerebral hemispheres, and then setting in active operation that wonderful machinery, may produce purely mental results without any necessary consciousness on the part of the individual. The Cartesian philosophy teaches that physiology is limited to the domain of consciousness, that the mind always thinks, that being and knowing are the same, and that even during sleep and stupour consciousness exists. Such doctrines are completely overturned, and so far from consciousness being the basis of all intellectual operations, it might, in some cases, be the result of them.

During sleep, when entirely unconscious, the mind works. Study a question in the evening, and you often find it solved in the morning. Laplace, the illustrious mathematician, tells us, in one of his works, that frequently he thought over a problem before retiring to rest, and found it solved in his mind on awakening. The school boy looks over his lesson in the evening, puts the book under his pillow, and knows the lesson in the morning. The idea is deposited in the brain, as a crystal is formed when the mother-water, after agitation, is allowed to rest. A just and scientific view of this interesting piece of philosophy is of great assistance in the understanding of many phases of animal and organic life.

Soon after the discovery of the double nature of nerves, it was surmised that the motor nerves pass up the front of the spinal cord, and the sensory along its back. Observations in cases of disease and injury soon showed such opinions to be erroneous, and their results have been corroborated by recent experiments made by Brown-Séquard, which prove that the motor tract is chiefly in the antero-lateral columns, and that the sensory fibres pass more especially along the centre of the cord, first crossing to the opposite side soon after they enter it, and that even the gray substance conveys sensory impressions. Besides containing these strands of fibres for sensation and motion, the spinal cord possesses a property of its own, known as the *excito-motor* function, by which a stimulus conveyed by a nerve to the cord excites a corresponding motion without the animal taking cognizance of it, or having any voluntary share in its taking place. Passing along the cord, the motor tracts pass to the opposite sides at the medulla oblongata, and then proceed in part to the cerebellum and in part to the pons Varolii. Those to the pons Varolii pass through the crura cerebri to the thalami optici, and the corpora striata. The physiologist traces them through the lower part of the pons, and the crura cerebri, and then along the lower border of the thalami to end in the corpora striata. The sensory fibres pass up in like manner to spread only in the thalami optici. It has also been shown, both by physiological and pathological observations, that in passing up from the medulla to the ganglia above, the motor tract contains more especially the fibres from the extremities, and that the nerves to the chest and those which are styled cranial nerves have distinct centres of power of their own.

The will has its seat in the cineritious structure of the brain, and influences the ganglia below by means of the white fibres of the medullary matter. It has not yet been positively determined whether any of the nerve fibres from the cord pass directly to the cerebral hemispheres, or whether they all terminate in the cerebral ganglia, the further communication between these ganglia and the hemispheres being in this case effected by independent fibres. The influence conveyed by the will differs altogether from that imparted by a nerve from the ganglia. In hysteria, when the influence of the nerve-centres is good, but the will is wanting, the natural character and plumpness of the limbs are preserved; in paralysis, from injury or disease of the ganglia, the limb is withered. It has been positively ascertained that the will can act upon the limbs only through the corpora striata and thalami; but it is yet uncertain whether it can act, when these are destroyed, through the nerve centres of the pneumogastric and other cranial nerves, upon the muscles of the face and chest. Anatomists would make fibres pass from the pons to the surface of the brain without touching the cerebral ganglia, and it might seem from some observations in

diseased persons, that the will could act irrespective of the intervention of the ganglia.

The large vascular supply to the corpora striata and thalami is probably the reason why hemiplegia, that is, paralysis of the arm and leg only, with a partial affection of some of the muscles of the face—is one of the commonest forms of paralysis. The loss of speech in right hemiplegia is so remarkable a circumstance, and one that has of recent years excited so much interest, that we will cite entire the whole passage in this article relative to this affection :—

"With regard to the loss of speech in right hemiplegia, I need scarcely say that my observations accord entirely with those of Dr. Hughlings Jackson, although the true explanation of this remarkable circumstance has yet to be discovered. It cannot be believed that the organ of speech is originally situated on one side of the brain only, and thus the explanation must be sought in some secondary cause. My colleague Dr Moxon has offered a very good theory, which probably has much truth in it; it is to the effect that of the two halves of which the body is made up one is more especially educated, and that the other follows the movement by consent. This phenomenon, which appears so remarkable, is probably merely one instance of a general law of our bodies which has been hitherto overlooked; so far from being exceptional, I believe it to be only one example amongst numerous others, which shows how partial is the education of our muscles. In the case of writing the fact is so evident that we have never thought of its importance in reference to the physiology of the brain; as most persons write with their right hand, a hemiplegia on this side deprives them of the power to write, whereas a similar affection of the left side has no such effect. Now, when we consider that the mechanism by which writing is performed is entirely the product of education, and that the various movements are guided by nerves which are themselves under the influence of the brain, it becomes evident that one side of the brain only obtains the guiding power. Hence, were it possible for the halves of the brain to be changed over, so that the limb should retain its activity, the power to write would, I take it, still be wanting. It might, of course, be acquired, and thus our hemiplegic patients again learn to talk as they did in infancy. It is probable that for those operations in which we can use both sides of the body equally both sides of the brain have been educated alike; but since in many acts one side rather than the other has been put into use, it has followed that one half of the brain has been specially educated. As regards the movements of the limbs, this is self-evident, but it now seems to be equally true of the power of speech, and it may be true, likewise, of many other operations, as, for example, musical performances. So, again, with reference to the eye; I have heard of a man who was in the habit of using a theodolite with the right eye, and who could not employ the left for this purpose, although the sight was equally good.

"There seem to be different degrees of loss of speech. Thus, in some cases there is a mere inability to articulate, whilst the patient is able to write; in others, a loss of memory of words until they are suggested; and in yet others a total forgetfulness of names, the patient giving everything a wrong appellation. It would be important to know whether these different symptoms are associated with distinct lesions; at present it is thought that loss of speech is associated especially with some disease in that part of the brain known as the island of Reil; and yet, at the same time, it is said that the loss of speech is nearly always connected with a hemiplegia. It follows, therefore, that, unless disease in the spot just named is sufficient to produce a hemiplegia, there must be an affection of the centres, extending towards the external parts.

"In all the cases which I have myself seen, and, if I remember rightly, in those which have been recorded by others, there has been disease in the central ganglia, and I take it that this is necessary for the production of a hemiplegia. But the question remains, is it necessary that disease should advance beyond these parts in order to cause the loss of speech? According to the theory of the education of the one side to the disparagement of the other, a simple loss of power is all that would be required to produce this symptom; and if, as a matter of fact, loss of speech accompanies all right hemiplegia, then, assuredly, a small spot of disease in the central ganglia is sufficient. It may, indeed, be

thought that a further extension of the mischief outwards to the gray matter of the hemispheres (especially in the region of the island of Reil) is essential to the further loss of all memory of words; and, on that supposition, we should be on the watch for cases in which this part is injured independently of the centres, and in which loss of speech would, perhaps, exist without any corresponding hemiplegia. Cases of loss of speech certainly occur without a paralysis of the limb, but I am not aware that they have been shown to be due to disease in the island of Reil. I have on more than one occasion seen loss of speech with right hemiplegia where the lesion was confined to the centres, but in these cases I believe that the failure of speech proceeded no further than an inability to articulate. Aphonia may also occur from disease in the pons Varolii, and I have thought that, by noting accurately this symptom in cases of disease lower down in the motor tract, we might obtain a proof of the importance of the anterior lobe in the production of speech. For example, a lady had disease in the pons Varolii; her tongue and soft palate were paralyzed, so that she could not utter a word, but she could write down accurately all her wants. On the other hand, I am now seeing a patient who has somewhat similar symptoms, denoting a disease of the pons, and who has loss of speech; but before this was complete, and when she spoke intelligibly enough to make herself understood by her husband, she called things by their wrong names. The cause was clearly not in the brain proper, for the temporary paralysis which she at first had was on the left side.

"If we believe that, for the production of a persistent hemiplegia, some part of the motor tract must be involved—if we find that in nearly all these cases of loss of speech with paralysis of the right side one of the central ganglia is affected—and if we also adopt the theory that this peculiarity is due to the education of one side alone—these facts would imply simply that the muscles of the tongue and palate had never learned to act in a certain definite manner; but whether the memory of words, being independent of the mechanism by which they are formed, requires another locality for its action, is very doubtful. This anatomical and physiological question merges into the old metaphysical one as to how far the idea must correspond with the outward sign. I apprehend that, according to Dr. Jackson's supposition, a disease of the left corpus striatum would necessitate a loss of the power of articulation, and, if it also involved the neighbouring cineritious structure, would likewise destroy the faculty of speech; while if the latter were the only function affected it would be surmised that the surface about the island of Reil was alone affected."

As regards the respective functions of the ganglia, though there can scarcely be a doubt that each has its own peculiar office, yet there is no evidence in the experience of Dr. Wilks, to connect the ganglia separately with the motor and sensory tracts. The anatomist, by dissection, shows that the motor tract passes into the corpus striatum, and the sensory into the thalamus. By clinical observation no such distinction in office has as yet been made out.

Disease of the pons Varolii, or medulla oblongata, by affecting special nerves, is productive of a distinctive form of paralysis. In ordinary hemiplegia there is merely a temporary inhibitory influence on the facial nerve centre, while in actual disease of the pons the nerve root may be involved, and thus, with the hemiplegia, there may be a decided facial paralysis on the same side. According to Brown-Séquard, in such a case, the upper part of the pons is affected; while when the lower part is the seat of disease, owing to the decussation of the fibres of the seventh pair in the pons, paralysis of the face occurs on the side opposite to that of the limb. This opinion Dr. Wilks has not been able to make sure of, from his own clinical observations. Disease of the pons may also affect other nerves, as, for instance, the fifth or the sixth. By disease still lower down towards the medulla oblongata, the fibres of the lingual and glossopharyngeal nerves are involved. Three instances of such an affection are given. Of disease confined to the medulla oblongata none are recorded.

Another symptom often observed in disease of the pons is contraction of the pupil, just as we see this produced by effusion of blood at the base of the brain or into the ventricles. This state of the pupils has often led to the suspicion of opium poisoning. In many instances, sensation has been markedly affected,

as evidenced by a feeling of coldness in the extremities; and in one case, in which a tumour pressed on the pons, a sensation of numbness, and various odd feelings over the body were experienced.

The effects of disease of the superficial gray matter of the brain, are shown in the following case, which we cite entire from its rarity as well as its extraordinary interest and importance. The case is comparable with one of paralysis resulting from unilateral arachnitis; but in the latter the inflammation is seldom confined entirely to one side, and it is necessarily accompanied by disturbance of the intellect:—

"Case 18. *Disease of cineritious surface of the brain; hemiplegia.*—A woman, æt. 36, struck her head against a beam of the ceiling several months before death; she subsequently became ill and had two or three attacks of vomiting. About three months before her death she became very ill, and took to her bed; she had febrile symptoms, sickness, &c., and was evidently suffering from cerebral disturbance. After the urgent symptoms had passed off she lay quiet in bed, and appeared quite sensible of what was said to her. She gradually became weaker in her limbs, and especially in those of the left side, until, in three weeks, her left side was quite paralyzed. After this she lay quiet, apparently sensible, and able, although with difficulty, to answer questions and to put out her tongue. On being asked a question she would wait and deliberate, and then slowly answer. The most remarkable symptom was the fact that she never seemed aware that she had lost the power of the left side. On being asked about her arm she always declared she could move it, although it lay helpless by her side. She gradually got weaker; mucus collected in her bronchial tubes, and thus she died.

"The post-mortem examination showed nearly the whole of the surface of the right hemisphere of the cerebrum to be diseased; it was in a very peculiar condition, as if the whole cineritious substance were undergoing disintegration. This was not so apparent on the surface as on taking off a thin slice, when the cortical part of the brain was seen to be of a yellowish colour, worm-eaten and soft. The disease, in some places, affected the deeper layers more than the external. The disintegration reached the medullary matter, but did not appear to penetrate deeper. This morbid condition extended all over the right hemisphere with the exception of the base. The left hemisphere was quite healthy."

In disease of the surface, as from compression, consciousness is gone together with the will; in disease of the centres the will is good, but the machinery is inefficient; in this case, one hemisphere remained healthy, and thus consciousness was preserved, the patient could not move the limbs, because the power to stimulate the apparatus was wanting, and yet, though consciousness remained, she did not feel the inability, the limbs receiving their usual nervous influence through the healthy nervous centres.

In the cases of paralysis from compression by blood or pus, the consequence of an injury, there are some highly important facts in the practice of surgery. One is that a partial hemiplegia, occurring soon after an injury, always points to a clot on the opposite side, and the other is that an abscess in the situation in which the clot of blood is thrown out, was never met with, so as to be accessible to an operation. The unconsciousness which comes on in these cases is produced by inflammation of the surface of the brain; and hemiplegia, if present, is either a symptom of arachnitis, or is due to the lesion of the brain having extended into the deeper parts. This theoretical objection to secondary trephining, Dr. Wilks says, is borne only by practice; it has fallen to his lot to examine the bodies of many in whom the operation has been performed, and though he has made repeated inquiries, he has never been shown in the wards of the hospital any cases in which recovery has followed such an operation.

Under the heading of *injury to the central parts of the brain from violence* are some cases of the highest importance in a medico-legal point of view, as they show that even in cases of injury the centre of the brain may occasionally receive all the violence of the shock. Several of the cases here related suggest the consideration that probably many erroneous impressions, as to the cause of particular nervous symptoms, arise from it not being known that disease of the brain may extend to the spine, and *vice versâ*. The ventricles of the

brain communicate with the subarachnoid space of the brain and spinal cord, and inflammation of one is constantly associated with a similar affection in the other.

Compression of the brain by depressed bone is a subject which Dr. Wilks does not discuss, not being furnished with well-attested facts that bear upon it.

Diseases implicating the surface of the brain affect the intellectual powers, the will and the consciousness, and produce convulsions. Of this portion of Dr. Wilks' paper we will not attempt to make an abstract. We will state, however, that no symptom is associated with disease of a particular part of the brain more certainly than convulsions with an irritation of the surface. Of epilepsy, Dr. Wilks says, that from clinical and post-mortem observations, as well as from all analogy, we cannot but conclude that the *fons et origo mali* is in the cineritious substance of the brain.

Disease of the medullary substance leads to symptoms, generally, of an altogether negative character. No paralysis ensues; there are no fits, and in many cases there is no pain; there is no disturbance of the intellectual functions, or, if present, it consists merely in a general observation of the faculties. Physiologists believe that this substance consists of fibres connecting the surface of the brain with the cerebral ganglia, and there is every reason to believe that this view of its structure is correct.

In Dr. Wilks's cases of disease of the cerebellum, there is nothing to support the general belief of physiologists, which is founded upon experiments made on the lower animals, that its function is to harmonize and co-ordinate the various movements. Nothing more was observed than a desire to lie quiet in bed, and an anxiety to be let alone, and these are common symptoms in other cerebral diseases.

As the fact is, apparently, not so generally known as it should be, we will state, in concluding our abstract of this paper, that instant death is not caused by disease of the brain. In other words, apoplexy is very rarely, if ever, a suddenly fatal disease. Even when blood is effused into the pons Varolii and the neighbourhood of the fourth ventricle, two or three hours elapse before the death of the patient. Among the reports of several thousand post-mortem examinations, Dr. Wilks found only one case in which death was sudden; this was a case of meningeal apoplexy.

V. *Remarks on some of the Functional Diseases of the Nervous System.* By SAMUEL WILKS, M. D.

These remarks are excellent, and the views maintained are of the more weight as coming from one who has devoted much time to pathological pursuits, and might therefore be supposed to be inclined to look for organic disease in all cases of disturbed function. That a nerve centre should act violently, and that it should cease to act, are conditions which occur in health; and we can hardly suppose that modifications of action, constituting morbid states of the nervous system, are necessarily evidence of organic disease. If various irregular movements in the limbs can be produced by voluntary effort, there seems no reason to look for organic change in that centre whence such movements proceed when they are altogether involuntary.

VI. *A few words on the Means to be adopted for Establishing a Communication between the Bladder and the Exterior of the Body, when the Urethra has become Impermeable. The last resource available in certain cases.* By EDWARD COCK.

In this paper, Mr. Cock recommends an operation that enables the bladder to be reached, when the catheter cannot be introduced in the ordinary way, and even when the bladder cannot be tapped through the rectum. This operation, which is tapping the urethra as it emerges from the prostate, is thus described:—

"The only instruments required are, a *broad* double-edged knife, with a very sharp point; a large silver probe-pointed director, with a handle; and a canula, or a female catheter modified so that it can be retained in the bladder,

"The patient is to be placed in the usual position for lithotomy; and it is of the utmost importance that the body and pelvis should be straight, so that the median line may be accurately preserved. The left forefinger of the operator

is then introduced into the rectum, the bearings of the prostate are carefully examined and ascertained, and the tip of the finger is lodged at the apex of the gland. The knife is then plunged steadily but boldly into the median line of the perineum, and carried on in a direction towards the tip of the left forefinger, which lies in the rectum. At the same time, by an upward and downward movement, the vertical incision may be carried in the median line to any extent that is considered desirable. The lower extremity of the wound should come to within about half an inch of the anus.

"The knife should never be withdrawn in its progress toward the apex of the prostate; but its onward course must be steadily maintained, until its point can be felt in close proximity to the tip of the left forefinger. When the operator has fully assured himself as to the relative positions of his finger, the apex of the prostate, and the point of his knife, the latter is to be advanced with a motion somewhat obliquely either to the right or the left, and it can hardly fail to pierce the urethra. If, in this step of the operation, the anterior extremity of the prostate should be somewhat incised, it is a matter of no consequence.

"In this operation it is of the utmost importance that the knife be not removed from the wound, and that no deviation be made from its original direction, until the object is accomplished. If the knife be prematurely removed, it will probably when reinserted make a fresh incision, and complicate the desired result. It will be seen that the wound, when completed, represents a triangle; the base being the external vertical incision through the perineum, while the apex, and consequently the point of the knife, impinges on the apex of the prostate. This shape of the wound facilitates the next step of the operation.

"The knife is now withdrawn, but the left forefinger is still retained in the rectum. The probe-pointed director is carried through the wound, and, guided by the left forefinger, enters the urethra and is passed into the bladder. The finger is now withdrawn from the rectum; the left hand grasps the director, and along the groove of this instrument the canula is slid until it enters the bladder.

"The operation is now complete, and it only remains to secure the canula in its place with four pieces of tape, which are fastened to a girth round the loins. There will probably be no escape of urine until the stilette is removed from the catheter.

"A direct communication with the bladder has now been obtained, and the relief to the patient will be immediate."

VII. *On a Case of Vitiligoidea Plana et Tuberosa.* By F. W. Pavy, M. D.

Vitiligoidea is the name given by Drs. Addison and Gull to an affection of the skin first described by them in the seventh volume, second series, of the *Reports*. The case here recorded is one exceedingly well marked. The tubercles, by which the disease is marked, were shown under the microscope to consist of nodules of exceedingly dense fibrous tissue, with interspersed fat granules. The examination revealed nothing to lend support to the notion that this disease is of a sebaceous nature.

This paper is illustrated by a coloured plate, containing three figures, showing the appearance of the face and head of the patient, and by a wood-cut, representing the microscopical appearance of a portion of a tubercle.

VIII. *Contributions to the Physiology of Binocular Vision.* By Joseph Towne. Section VII.

In the former sections of these *Contributions*, the observations had reference chiefly to the stereoscope and stereoscopic results; in the present, the facts are applied and illustrated to exhibit them in their relation to binocular vision. They would seem to lead to these conclusions:—

That we do not see from the orbits, or in the direction of the two eyes.

That the eyes are not the true organs of vision, but must be regarded simply as two cameras, instruments for gathering in the retinal images, but having no action *external to themselves*.

That we see in the direction of the median plane of the head as from one central eye, and that this central eye consists of two symmetrical halves, the right half comprising the right halves of the two retinæ, and commanding the

left side of the external field; the left half comprising the left halves of the retinæ, and commanding the right side of the external field.

This paper is accompanied by two plates containing a number of explanatory figures.

IX. *Clinical Remarks on the Treatment of Diseases of the Heart.* By S. O. HABERSHON, M. D.

No class of diseases, as Dr. Habershon says, excite greater alarm than affections of the heart, and in none is greater relief afforded by right treatment. It is not, however, by any direct remedy or specific that alleviation can be effected, but rather by attention to certain plans or principles of treatment, which must serve as our guides in such cases. Their principles are thus excellently well set forth; they are—

1. To lessen the work of the heart.
2. To insure regularity of action.
3. To lessen distension of its cavities.
4. To prevent syncope.
5. To strengthen the muscular fibre of the heart.
6. To hinder the fibrillation of the blood in the heart and great vessels.
7. To prevent secondary complications, and to relieve them when produced.

The advice given to effect these ends is admirable.[1] Several cases of heart disease are appended, as affording illustrations of the practical application of the principles laid down; and they also suggest many points of interest in relation to diagnosis and pathology.

A plate is added to this paper to illustrate a case of disease of the pulmonary valves.

X. *Twelve Cases of Poisoning, apparently from the Use of Copper for Culinary Purposes. Death from poison or disease after nineteen days' illness.* By ALFRED S. TAYLOR, M. D.

This paper, like all similar contributions from Dr. Taylor, is of importance in a medico-legal point of view. He makes one statement which deserves especial attention. The gravy, he says, by which the persons were poisoned, was prepared by stewing the meat with common salt in a badly tinned copper stewpan, and the liquid allowed to remain in the vessel throughout the night. This mode of preparation, it is said, "involves conditions necessary for impregnating a liquid with a salt of copper."

XI. *On Papillary Tumours of the Gum.* By S. JAMES A. SALTER, M. B., F. R. S.

This paper contains the histories of two very remarkable and extremely rare tumours of the gum. It is illustrated by four woodcuts.

XII. *On Amputation of the Cervix Uteri, and other Methods of Local Treatment, in cases of Malignant Disease of the Uterus and Vagina.* By J. BRAXTON HICKS, M. D.

For amputating the neck of the womb, Dr. Hicks prefers the use of the écraseur, a very strong rope of wire being passed around the neck, to the shaft of the instrument, which should be placed in front of the cervix. He states that he has operated, or been present, in more than twenty-eight cases, and has never seen any fatal result or any untoward symptom whatever.

As a styptic to check offensive discharges, Dr. Hicks has found the anhydrous sulphate of zinc, which has been much commended by Sir James Simpson, very efficient. It is readily made by placing the ordinary sulphate of zinc in a porcelain basin over a spirit-lamp. The salt first melts in its water of crystallization, after which it gradually dries; when completely dried it can be powdered. A good form of application is to mix it with glycerine to a paste-like condition. It has a powerful effect upon the abnormal tissue, and but little or none on the sound, and can therefore be used liberally without fear of injury. Should it cause much pain, which it seldom does, this is readily relieved by injection of warm water.

[1] For some further notice of these measures see Quarterly Summary.

XIII. *A Case of Intermittent Hæmaturia, with Remarks.* By WILLIAM W. GULL, M. D.

This disease is characterized by the passing, at intervals, of urine of a dark colour, looking as if it contained blood. No blood-corpuscles, however, are present. Under the microscope are found granules, consisting of very small prismatic crystals of hæmatin, granular casts of the tubules, a few degenerated epithelium-cells, and crystals of oxalate of lime.

The history of the case related in this paper is given in detail, and followed by some very interesting remarks upon the functions of the kidneys. One of the great functions of these organs, as is well known, is to form the colouring matter of the urine from the colouring matter of the blood, and when they are not in a healthy state, the hæmatin is not eliminated in the condition of urine pigment; instead of that, the hæmatin itself passes off. Dr. Gull believes that the renal tubule is not excretive, but secretive and absorptive; and in this opinion, if we are not mistaken, the best anatomists coincide with him.

XIV. *Contributions to the Practical Surgery of New Growths or Tumours, Series V.—Cartilaginous and Bony Growths.* By JOHN BIRKETT.

The cases, nine in number, which are recorded in this series, form an important addition to the literature connected with a class of tumours not often met with, and which cause, at times, errors in diagnosis.

This paper is accompanied by two lithographic plates.

XV. *A Case of Abdominal Tumour.* By S. O. HABERSHON, M. D.

This case is one of cancerous disease of both supra-renal capsules, simulating disease of the spleen and lumbar glands. The symptoms were emaciation, a fixed pain in the region of the growths, irregular perspirations, complete loss of appetite, occasional vomiting, restlessness, want of sleep, and extreme prostration. The physical signs were sallowness of the countenance, and abdominal tumours in both lumbar regions and in the left hypochondrium, with bulging of the lower ribs on the left side.

The case is illustrated by a plate, which shows the relative positions and comparative sizes of both supra-renal capsules and both kidneys.

XVI. *On the Urine in Acute Rheumatism.* By THOMAS STEVENSON, M. D.

This paper contains the details of some cases of acute rheumatism. Each case is thus arranged: After a very brief history of the case the daily excretion, in grains, of urea, uric acid, phosphoric acid, and sulphuric acid, during the acute stage, is stated, and by the side of these quantities are given the corresponding quantities excreted during convalescence, whenever they were ascertained. When the weight of the patient, during health, was known, a table is given which exhibits the proportionate quantities of the above substances excreted for each pound weight of the body. The conclusions arrived at by Dr. Stevenson are these:—

"1. In acute rheumatism, when the excretion of solid materials in the urine is large, the patient makes, other things being equal, a rapid recovery; on the other hand, in lingering cases the excretion of solids is usually small.

"2. As in this disease the urine is invariably scanty in bulk, but (generally from this cause only) of high density, a useful guide to the progress of the case may probably be found by diluting the urine to the normal bulk, and then ascertaining its specific gravity. According as it is now of high or of low density will the progress of the disease probably be favourable or unfavourable.

"3. Though the excretion of urea is usually greater during the height of the disease than during convalescence, this is not invariably the case; the reverse sometimes occurs. Though the excretion of urea is greater during the disease than during the early stage of recovery, the urea in the former stage seldom very much exceeds in amount the normal physiological excretion.

"4. The uric acid is always much increased whilst the disease continues.

"5. The phosphoric acid is generally in greater amount during the progress of the disease than during recovery, but the quantity of this substance rarely much exceeds the quantity secreted in health.

"6. The excretion of sulphuric acid is generally increased, and often largely.

In one instance more was excreted during recovery than during the acute stage of the disease. The amount of this substance excreted is very variable."

XVII. *Case of Excision of the Spleen for an Enlargement of the Organ, attended with Leucocythemia, in a patient under the care of Dr. Wilks; with Remarks.* By THOMAS BRYANT.

In this case, the patient was operated upon at 2.30 P. M. and died at 4.30 P. M. An examination after death showed a large clot of blood in the abdomen, weighing about one and a half pounds. Whence the hemorrhage had proceeded was not satisfactorily determined.

Mr. Bryant, although the result in this case was unfortunate, is more disposed than ever to operate in similar cases.

XVIII. *Spontaneous Cure of Aneurism of the Aorta.* By WALTER MOXON, M. D.

In this paper the history is given of a patient, where, after his death from cancer, an aneurism of the aorta was found, that had spontaneously healed. The conditions under which a cure has taken place, in this and similar cases, are minutely considered, so that, if possible, these conditions may be imitated. It may be stated, positively, that the cure of aneurism is always associated with wasting of the body, or conditions otherwise equivalent to the method of Valsalva.

This paper is illustrated by two plates, containing four figures.

XIX. *Notes on Cases connected with Obstetric Jurisprudence.* By J. BRAXTON HICKS, M. D.

These cases are of fracture of the skull in new-born infants; fracture of the fœtal cranium in utero by the midwife's manipulations; attempt of the mother to injure the child during the pangs of delivery; occurrence of apparent death between the birth of the head and that of the body; spasm of the larynx; and the relative rapidity of the decomposition of the fœtus and placenta in utero.

This paper is an interesting one, and some of the observations are new to us. It should be studied by those concerned in medico-legal investigations.

XX. *Cases of Acute Rheumatism treated by Lemon-Juice; with Remarks.* By S. OWEN REES, M. D.

The cases of acute rheumatism detailed in this paper are nine in number. They go to show that when lemon-juice is administered (two or three ounces, every four, six, or eight hours) the pain is relieved earlier, and the duration of symptoms is less, than when the disease is treated upon the expectant plan. The average duration of the disease in the one case was 6.8 days, in the other 8.5.

XXI. *Select Clinical Reports.* (Memoir V.) By G. H. BARLOW, M. D.

There are five cases reported in this present memoir, all of them cases of rheumatism. Some prefatory remarks are so appropriate and so well expressed that we think proper to quote them:—

"There are few practical questions upon which, as it appears to me, there has been greater diversity of opinion amongst medical men than that of the treatment of acute rheumatism. I do not at present allude so much to the now obsolete practice of indiscriminate bleeding and calomel, as to the later modes of treatment by chemical action, by elimination, and by merely expectant treatment. I am not prepared to say whether chemical remedies produce their effect by the decomposition or neutralization of the peculiar acid present in the blood in rheumatism, but it is nevertheless true that the most successful of these, the lemon-juice, contains a salt of potass, which may be an eliminant, and that citric acid in its uncombined state has not the same efficiency. The occasional success of the expectant treatment, or the giving no active medicine whatever, has been regarded by some as a proof of the inutility of all the other modes of treatment, and by some as an argument against the use of drugs in the treatment of disease in general. What, however, I would urge is that no one of these modes of treatment is most applicable to all cases, and that the success of the expectant treatment only shows that rheumatic fever, like all acute disease, is capable of spontaneous recovery; and that where this recovery is proceeding steadily

and safely the officious use of drugs is to be avoided, and that the skill of the experienced practitioner never appears to greater advantage than in the discrimination of the cases which do not require his interference; but that, on the other hand, many cases will not proceed thus favourably if left to themselves, and in such instances there is occasion for the use, not of a specific remedy, for as yet we know of none such for rheumatism, but of medicines adapted to the exigencies of the particular case."

XXII. *A Second Report of Cases of Acute Rheumatism treated in the Wards of Guy's Hospital, with Remarks on the Natural History of the Disease.* By HENRY G. SUTTON.

This report, as the first one in the preceding number of the *Reports*, gives the history of cases of acute rheumatism treated by mint water alone, or almost alone. The conclusions arrived at are the same.

XXIII. *Cases of Operations on the Larynx.* By ARTHUR E. DURHAM.

Two cases are here related where the larynx was freely opened by an incision in the median line, through the thyroid cartilage, and adjoining parts; in one for the removal of warty growths, in the other for the extraction of a cherry stone. In both the result was satisfactory.

Two remaining papers in this volume are entitled respectively:—

XXIV. *On Diseases of the Retina; with Remarks on its Structure and Normal Conditions.* By C. BADER, and

XXV. *Clinical Remarks on Perforations, and some other Morbid Conditions of the Membrana Tympani.* By JAMES HINTON.

Of these papers we cannot attempt to present an abstract. The first occupies seventy, the second fifty pages, and each is a monograph of rare value, and well worthy of an elaborate review. The one by Mr. Hinton is beautifully illustrated by coloured plates representing various morbid conditions of the membrana tympani.

O si sic omnia! If from every large hospital should issue yearly a volume of "Reports" such as that furnished by the gentlemen forming the medical staff at Guy's, what strides our profession would make! All honour and praise be to them for the noble use they make of their advantages for the common good. W. F. A.

ART. XVIII.—*St. Bartholomew's Hospital Reports.* Vol. II. London, 1866. 8vo. pp. 264.

FOR more than thirty years, a volume of reports, as is known to many of our readers, has been annually issued from Guy's Hospital. The great favour with which those volumes have been received, from their making widely known the practice of one of the leading hospitals of London, and thus throwing open to the whole profession a large emporium of knowledge, which would otherwise have been restricted to the hospital staff and pupils; and likewise the reputation which that publication has obtained for the medical school, and the stimulus it has imparted to the clinical pursuits of the pupils, have induced several other London hospitals to follow the example set by Guy's.

The volume before us, issued from St. Bartholomew's, is the second that has appeared, and is creditable to that venerable institution. It contains twenty-six articles, a brief abstract of which we shall lay before our readers.

Art. I. *Pathological Anatomy of the Kidney.* By REGINALD SOUTHEY, M.D.

In this paper the author treats in separate divisions of the pathological conditions of the cellular, vascular, and glandular elements. Under the first, he includes *hypertrophy* and *cellular* hyperplasy; the former being "a simple increase of the intercellular elements or substance;" the latter "those changes which take origin from the cells of the connective tissue." He observes, that

portions of the stroma in the medullary portions of the kidney at times assume an hypertrophied condition, and are apt to be mistaken for tubercles, but differ from them in their larger size and opaque white appearance. With the vascular condition he treats of the so-called, amyloid change, believing it to be due simply to the thickening of the walls of the renal vessels at the expense of their calibres, and quotes Schmidt and Kekulé to prove that the material characterizing it is of an albuminous nature, having no relation whatever to cellulose. In its early stages, it is often confounded with diseases to which it has, in reality, no affinity. "The kidney may be firm, level, smooth, rather large, the capsule non-adherent, the tissues somewhat over-translucent, and yet there may exist no amyloid change whatever in the vessels; again, it may present no apparent trace of disease, and yet prove amyloid in a high degree. It may have every look of having been the seat of old glandular disease, be small, granular looking, with an adherent capsule, and an irregularly packed surface, with diminished cortical and vascular and drawn-up medullary portion, yet still be the seat of extensive amyloid degeneration." An instructive account of vascular obstruction is given. If the artery plugged by an embolus be small, an ecchymosed area, at times of a dusky hue, results, which subsequently becomes yellow from within outwards. Venous obstruction (thrombosis) is rarely complete, more or less blood returning through or around the clot. Cystoid degeneration is considered to be a disease of the glandular element; and is observed to be invariably associated with the straight tubes as a result of their obstruction.

No allusion is made to cancer, tubercle, or to effects of inflammation, and presence of calculi. The apparent object of the paper is to present some account of the pathology of the more obscure conditions of the organ. Although unaccompanied with illustrations or cases, the descriptions bear evidence of careful observation.

Art. II. *On Congenital Cystic Tumour.* By THOMAS SMITH.

The author gives an account of a class of tumours presenting the characters of cystic growths, but not deriving, so far as is shown, any peculiar features from their intra-uterine origin. They are confined to the trunk, and when placed along the line of the spine, may be confounded with spina bifida. Eight cases of the disease, occurring under the author's observation, are recorded. Six were cured by operation with the seton, to which decided preference is given; while spontaneous cures were effected in the remaining two.

Art. III. *Practical Observations on Diphtheria.* By W. NEWMAN, M. D.

This article furnishes a digest of our knowledge of the disease to the stock of which Dr. Newman makes no pretension to addition. He recommends application of strong hydrochloric acid, diluted one-half by honey or water, to the fauces once or twice in the twenty-four hours. He places little value upon gargles, and is opposed to any means of counter-irritation. He recommends the use of the chlorates internally. The following formula, combining an efficient local application, and a means of introducing chlorine readily into the system, may be employed with asserted advantage. R. Potass. chloratis, ʒij; acid. hydrochloric. fʒij; aq. destillat. fʒij. Mix the acid and water together first; add the mixture to the chlorate of potash, and keep the whole in a dark place; ʒij of this solution to be mixed with a pint of water, of which the dose is one or two tablespoonfuls, according to age, for internal use; or a wash for mouths or gargle. In speaking of diet, he says: "No existence of feverish symptoms, should, for a moment, be deemed warrant for confining a child to low diet. New milk is of very much value, and may be used in large quantities. Farinaceous articles are least to be trusted to."

Art. IV. *On the Relation of Phlebitis and Thrombosis to Pyœmia.* By WM. S. SAVORY, F. R. S.

The author presents an elaborate paper upon this subject, giving, in addition to his own, the views of pathologists, from the well-known experiments of Cruveilhier to our own time. But no new facts are presented; and it is by such alone that this much mooted point can be settled. He concludes as follows: "The sum of all that has been said amounts to this—

"Thrombosis may exist without any evidence of phlebitis, and very often occurs without being followed by pyæmia.

"Phlebitis may occasionally exist without thrombosis, and often occurs without being followed by pyæmia.

"Pyæmia often exists without any evidence of thrombosis or phlebitis; still oftener it occurs without any evidence whatever, that it has been preceded by either of these, or of any other affection of the veins."

Art. V. *Case of Intracranial Cyst containing Hair; also a Case illustrating the Physiological Action of Iodine.* By Wm. Turner.

The first case is that of a tumour, assigned to the group of cutaneous proliferous cysts of Paget, placed between the dura mater and occipital bone, of a child æt. 23 months; it being held by the author to have had at an early period communication with the integument. The second case is that noticed in the person of a chemist who was attacked with catarrh and excessive flow of tears, with smarting and photophobia, occasioned by exposure to the fumes of iodine and hydriodic acid. It is chiefly interesting from the rarity of the vapour of iodine acting upon a mucous surface to induce local iodism.

Art. VI. *Remarks on the Use of the Thermometer in Disease.* By John Southey Warter, M. D.

This paper furnishes the results of a series of daily observations extending over a period of two years. The temperature in diseases of the blood, lungs, abdomen, brain, and spinal cord, are treated of in order. In speaking of the distinction between typhus and typhoid fevers, he uses the following language: "In typhus fever running its usual course, there seems a direct ratio between the rapidity of the circulation and the heat of the body; the pulse and temperature rising together till the fever reaches its climax, when the pulse ranges generally from 110 to 144, and the temperature from 103° to 104° F. At one time, I used to think, that a low pulse and high temperature at the commencement of fever always indicated that it was specifically typhoid, but more extended observation has taught me that there are many exceptions to this rule; thus, occasionally, in febricula, rheumatism, tonsillitis, exhaustion from suckling, and phthisis pulmonalis, a temperature of 102° or 103° may occur with a low pulse rate; and these exceptions are the more worthy of attention as the aspect is in them often typically that of the early stage of typhoid fever; thus, in all there may be a clear, white, and perspiring skin, red lips, tinted cheeks, and dilated pupils, and hence, without some closer investigation, a superficial observer may be often deceived in his diagnosis. Perhaps the cases of enteric fever, in which the diagnostic use of the thermometer is most striking, are those in which malaise, and, perhaps, some diarrhœa have existed for several days, and yet the patient has got about; one day at length, however, the doctor is consulted, and finding the tongue clean and the pulse quiet, he is thrown from his guard, and is about to think but little of the attack; wishing to make sure, however, ere he dismisses his patient, he places his thermometer in the axillæ, and the mercury rising to 102° or 104° shows him that it is typhoid fever, and not a simple diarrhœa that he has to deal with. Again, in how many cases of supposed typhus does the thermometer, by marking a low temperature, contradict every other symptom! There may be a history of exposure to infection, a rigor may have occurred, the face may be muddy, the eyes injected, the pupils small, the pulse rapid, and the tongue thickly furred; still, if with all this the temperature at midday is below 99.5° or 100°, typhus fever, at any rate, may be stated positively not to exist." "In typhus, the pulse and temperature rise more or less together until the seventh, eighth, or ninth day, when they are at their highest; then they begin to decline, and drop steadily day by day in unison, both becoming normal about the fifteenth or sixteenth day. In typhoid fever, however, all is chaos; the pulse and temperature rise and fall irregularly." The author finds the temperature in active tuberculosis always elevated some time during the day, and it also follows the rule of being higher in the evening than in the morning; while cancer, in its ordinary form, does not give rise to any increase of temperature. The value of the thermometer was made less evident in diseases of the abdomen. Softening of the spinal cord in one instance caused a tem-

perature of 106°, though nervous affection generally, whether functional or organic, indicated a slight elevation of the temperature.

Art. VII. *On the Treatment of Enlarged Bursa over the Patella.* By WM. S. SAVORY, F. R. S.

The method preferred by the author is displacement of the tumour by puncture with the lancet, and subsequent equable compression by bandaging. In the event of the sac's refilling, the operation must be repeated. Should suppuration come on, poultices are to be substituted for compression. It is claimed by Mr. Savory that this method is safer and more expeditious in effecting cure than by either seton or extirpation.

Art. VIII. *On Gouty and some other Forms of Phlebitis.* By JAMES PAGET, F. R. S.

Gouty phlebitis appears to differ from other forms by its tendency to symmetrical metastasis, a fact which points towards the primary invasion of the walls of the veins, and, by its peculiar tendency, to recur. From the cases observed—the number is not given—one case alone proved fatal. Two cases of idiopathic phlebitis, both apparently dependent upon blood-poisoning from tainted atmosphere, are detailed: in one of which a man, æt. 42, who died after three weeks' illness, without symptoms of embolism, the vein of both upper and lower extremities were found to be inflamed and filled with clots. The heart was fatty, but without clots, while abscesses were detected. Markedly in contrast to such a condition is that described as following obstruction of single portions of great veins. Three cases are recorded where such a lesion was thought to have been recognized. The limb in all instances appeared as though increasing in muscular power, and the author believes real enlargement of the muscles of the limb to have taken place. The superficial veins were over full, the skin was pale or dusky, and marked with small bluish spots, while cool to the touch.

Art. IX. *Case of Congenital Myopia; with a faulty perception of colours limited to a small portion of one retina, of recent origin.* By BOWATER J. VERNON.

Mr. Vernon gives a minute description of this case which is interesting from the fact that imperfect perception of colors existed in the retina of the right eye, while that of the left was in every respect perfect.

Art. X. *Respecting Rupture of the Axillary Artery in Reducing Dislocation at the Shoulder-Joint.* By GEORGE W. CALLENDER.

In this paper is detailed a case of dislocation downwards and forwards in which, while the author was effecting reduction by manipulation during the sixth week, the axillary artery was ruptured. The vessel was tied five weeks afterwards; gangrene following on the fifth day, and death from pulmonary embolism on the seventh. A similar case (Mr. Paget's) is given in which the operation, performed three months after the accident, was entirely successful. The remainder of the article is devoted to brief notices of thirty-one recorded examples of the lesion. It is remarked that the occurrence of the accident is most common among persons over fifty years of age, a fact which does not, in the estimation of the writer, militate against attempt at reduction by manipulation where the arteries are not suspected of being diseased.

Art. XI. *Remarks on the Rectangular Talipes Equinus of Orthopœdic Surgery.* By HOLMES COOTE.

The author gives a brief notice of a deformity of the foot due to a "state of tension of the gastrocnemic muscle," sufficient to prevent proper flexion and extension, but not to the degree occasioning the typical deformity of talipes equinus. When paroxysmal, attention to the general health is at times remedial; but "in the majority of cases the division of the Achilles tendon becomes ultimately necessary." The paper is illustrated with a wood-cut.

Art. XII. *On the Treatment of Irreducible Hernia.* By JOHN LANGTON.

The plan proposed is that of steady and uniform pressure by means of a compressing bandage. A "fair amount of success" is claimed for it, and cases

of irreducible hernia rendered reducible through its agency are narrated. While we can understand the efficacy of such pressure upon an old rupture, all things being equal, we would entertain doubts as to the propriety of its employment in those cases removed from the watchfulness of the surgeons, as when persons follow their ordinary occupations while under treatment.

Art. XIII. *Case of Wound of the Right Lumbar Region, involving and laying bare the Kidney; complete Recovery.* By BOWATER J. VERNON.

Mr. Vernon narrates an interesting case of wound of right kidney in the person of a lad who fell from a height of forty feet upon his loins. The inferior extremity of the organ protruded. It was seen to be of a dull red-brown colour, "and moved freely with each contraction of the diaphragm;" its wounded surface had a fibrous appearance, and was free from blood. Urine escaped from the opening, and continued at intervals to pass away through the external wound during recovery, which was completed at about the tenth week.

Art. XIV. *The Inheritance of Cancer, and its Relations to Questions concerning the Local or Constitutional Origin of the Disease.* By W. MORRANT BAKER.

This paper is made up of deductions from a tabulation of 103 cases, to the effect that a pre-existing constitutional condition is necessary for the local development of cancer.

Art. XV. *Observations on the Pathology and Treatment of Joint Disease.* By HOLMES COOTE.

Chronic inflammation of the cancellous structure of bone is believed by the author to be the cause of a form of arthritic disease characterized by enlargement of the affected bone, with constant and abiding pain in the adjacent joint, unattended by synovial inflammation.

Art. XVI. *On the Prejudicial Effect of Inter-Articular Pressure in Joint Disease; and the Application of Continuous Extension, by means of a Weight, as a Remedy for this Condition.* By T. HOWARD MARSH.

The author discusses the advantages of extension in strumous joint disease, and in cases of deformity from burn. No mention is made of the operation of tenotomy now so favourably recognized by American surgeons.

Art. XVII. *Notes on Oxaluria.* By DYCE DUCKWORTH, M. D.

The author briefly details five experiments confirming the effects of ingesta in inducing oxaluria; and indicates the presence of the acid in the urine during the convalescent stage of the majority of acute disorders.

Art. XVIII. *On the Treatment of Acute Pericarditis by Opium.* By FREDERIC J. FARRE, M. D.

Eleven cases are presented, in nine of which the average duration of the disease was fifteen days, the shortest being three days. The opium was administered in grain doses every six hours, combined with camphor; in conjunction with bicarbonate of potash 20 grs. three times a day. Pain was relieved by leeches beneath left scapula, and blisters over region of heart.

Art. XIX. *Surgical Cases, Devon and Exeter Hospitals.* By PHILIP CHILWELL DELAGARDE.

In this paper seven different subjects are introduced in as many pages. The result is unsatisfactory. In the record of a case of resection of the head of the femur for unreduced luxation into the sciatic notch, the author makes no mention of the after-treatment, or condition of the limb upon recovery, but concludes by saying "the relief was immediate." A case of traumatic tetanus with recovery which supervened upon injuries incurred from a waggon passing over both thighs, is given. The disease set in three weeks after accident, and under supportive treatment, terminated favourably in seventeen days.

Art. XX. *Case of Profuse Venous Hemorrhage from the Left Meatus Auditorius Externus, consequent on a Fall upon the Back of the Head.* By LUTHER HOLDEN.

A drunken man, while walking in the street, falls and strikes his head against

a lamp-post. Profuse hemorrhage takes place from left ear. The meatus is plugged, and the bleeding ceases. He does well until the twelfth day, when renewed bleeding follows the removal of the plug. The case terminates in recovery, but with loss of hearing in ear of affected side, upon the twenty-fourth day. The probable source of hemorrhage was from the lateral sinus, which rupturing the mastoid cells, allowed the escape of blood through the lacerated tympanic membrane.

Art. XXI. *Case of Aneurism of the Lower Part of the Common Iliac, of the External Iliac and Femoral Arteries, successfully treated by Pressure of the Abdominal Aorta.* By VINCENT F. ECK.

Four hours' firm and continued compression by a Lister's tourniquet is reported to have cured an aneurism of two years' standing. In one month after operation the patient was entirely well.

Art. XXII. *Medical and Surgical Landmarks.* By LUTHER HOLDEN.

"In going round the wards of the hospital I often have occasion to point out, on the surface of the living body, any landmark—such as a line, an eminence, a depression, which is a guide to, or an indication of, deeper-seated parts; and I find this practice all the more useful, because many, even advanced students of anatomy, are not so ready as they ought to be in recognition of parts when covered by skin. They are familiar enough with the bones, muscles, and blood-vessels displayed in the dissected subject, but are often at fault when they come to put this knowledge into practice." Following these prefatory remarks, the author briefly indicates the chief features or "landmarks" having valuable surgical relations of the several regions, commencing with those of the head; this article, which promises to be one of a series, terminates with the region of the back. In speaking of parotid abscess he recommends holding the blade of the knife horizontally, so as to be less likely to injure the branches of the facial nerve. He countenances the division of the gustatory nerve for temporary relief of pain in carcinoma of the tongue. The following are apt remarks upon tracheotomy: "In the dead subject nothing is more easy than to open the trachea; in the living, no operation may be attended with greater difficulties. You must expect to find the patient with his head bent forwards, and the chin dropped, to relax as much as possible the parts in the neck. On raising his head a paroxysm of dyspnœa is almost sure to come on, threatening instant suffocation. The elevator and depressor muscles draw the trachea and larynx up and down with a rapidity and a force which may bring the cricoid cartilage within half an inch of the sternum. The great thyroid veins which descend in front of the trachea are sure to be distended. There may be a middle thyroid artery. In children two lobes of the thymus may rise in front of the trachea as high as the thyroid gland, so that the whole length of the air tube may be covered by important parts which ought not to be divided. Considering all these possible complications, the least difficult mode of proceeding is to open the trachea just below the cricoid cartilage, and if room be requisite, to divide the cricoid itself."

The conception of this series of articles is a very happy one, and capable of indefinite elaboration. It will be observed the author does not confine himself to the anatomy alone. The hints in treatment scattered here and there are valuable and recognized as coming from a practical hand. But when he asserts "in the language of transcendental anatomy, we may say that the central tendon of the omo-hyoid represents a rudimentary cervical rib," and that "its posterior belly is analogous to a serration of the serratus magnus; its anterior belly to a sterno-hyoid," we are reminded that the observation of the transverse processes of the cervical vertebræ being the *true* rudiments of cervical ribs, has been confirmed; and are inclined to believe that no "transcendental" anatomist will accept the language of the author as a part of his own.

Art. XXIII. *Note on the Termination of the Second Case of Poisoning by Mercuric Methide.* By GEORGE N. EDWARDS, M. D.

This article is the continuation of a case reported vol. i. p. 144, and is chiefly devoted to a description of the post-mortem examination.

Art. XXIV. *On an Operation for the Relief of a Stricture of the Urethra.* By Geo. W. Callender.

The author, following a suggestion of John Hunter's, performed a perineal section in the following manner: The bladder having been previously punctured in the supra-pubic region for retention, a curved catheter was introduced through the opening and guided into the urethra from behind forwards to the point of stricture. A straight catheter was then passed to the contracted portion from in front, and the line of incision made between the extremities of the two instruments. The patient was discharged cured in about three months after operation.

Art. XXV. *On the Value of Palpation in the Diagnosis of Tubercular Disease of the Lungs.* By Geo. N. Edwards, M. D.

Dr. Edwards presents a table of fifty cases of phthisis in which the locality of the deposit was recognized by him by palpation alone, the assertion in each instance being afterwards confirmed by others by auscultation and percussion. The author concludes by saying: "It is almost impossible to express in words what is the difference between the sensation imparted by that portion of the chest situated over tubercular and that over healthy lungs; perhaps it may rather be described as a want of elasticity than anything else. I only know that it exists, and may be easily perceived by any one who will examine a sufficient number of cases."

Art. XXVI. *Extracts from the Statistical Report of the Hospital for the Year* 1865.

This is an elaborate statement of the number, character, and results of treatment of the diseases and injuries admitted during the year. Tables 4 and 5 are particularly valuable, showing as they do the proportion of "diseases occurring within the hospital in patients admitted for other causes in the sargical wards," as well as "cause of death in fifty patients after operation." Among the latter we notice a death from pyæmia following lithotrity. H. A.

Art. XIX.—*Proceedings of the American Pharmaceutical Association at the Fourteenth Annual Meeting, held at Detroit, Mich.*, August, 1866. 8vo. pp. 316. Philadelphia, 1866: Merrihew & Son, Printers.

Like its predecessors, this volume is a record highly creditable to the "American Pharmaceutical Association," as well as to the profession of pharmacy in the United States. The phonographic report of the proceedings at the several daily sessions of the annual meeting is interesting and instructive. The reports of the committees manifest a frank truth-seeking and truth-exposing disposition which inspires confidence in their accuracy. The report on the progress of pharmacy includes a list of publications, in the English, German, and French languages, connected with the subject, brief notices of processes, apparatus, &c., as well as of articles of materia medica, vegetable, animal, and inorganic, with modified and novel chemical processes, so that we have a condensed summary of whatever has been offered to the attention of "pharmacists" during the year preceding the date of the report. The volume contains also ten "special" and twelve "volunteer" reports and essays. Answers to queries propounded at previous meetings are termed special reports. For example: "*Query* 30th. What is the most perfect and reliable process of manipulation to produce liquor ammoniæ acetatis pure, and in a neutral or slightly acid condition?" The answer is by Wilson H. Pile, M. D. In order to avoid the objections to the usual practice of dispensing ammoniæ acetatis liquor by apothecaries, he proposes that solutions of sesqui-carbonate of ammonia and of acetic acid of proper specific gravity, shall be kept separately prepared in the shop. "The solutions keep well, and it is only necessary to mix them in equal quanti-

ties to produce an effervescent draught of neutral acetate of ammonia, retaining the free carbonic acid, so desirable as a remedial agent."

Mr. James T. King, of Middletown, N. Y., contributes a short paper—Metallic Lead in Flour—in which he states that during February, March, and April, 1865, about 250 persons within a radius of five miles were affected with symptoms of poisoning by lead, which was traced to repairing with metallic lead the burr-stone on which the flour used by the patients had been made.

The "Proceedings" of the annual meetings of the "American Pharmaceutical Association" ought to be included in the library of every "pharmacist" who desires to keep pace with scientific progress; we may add, practitioners of medicine generally cannot consult the work without adding items of practical value to their stock of knowledge. We commend this volume to the attention of both physicians and apothecaries, or, as it is proposed to style them, pharmacists. W. S. W. R.

ART. XX.—*Clinical Histories with Comments.* By HENRY DAY, M. D., Member of the Royal College of Physicians; Physician to the Stafford County Infirmary. 8vo. pp. 254. London, 1866.

THE work of Dr. Day is composed of short clinical histories of various diseases, with comments in respect to certain points of their etiology, diagnosis, or treatment. These histories are not presented by the author as claiming "the highest position in medical research." They are in general based upon too limited a number of observations to warrant any such claim being set up in their behalf. All that the author has aimed at is, through the pages of the work before us, "to speak to his brethren in common language" on subjects of common interest. He has not presumed to teach them, but has endeavoured in a humble way to quicken their interest in the subjects embraced in his clinical histories, and to elicit from each whatever knowledge he may possess in respect to them. The same plan is pursued as marked the earlier steps in the history of medicine, whether as a science or an art. This plan is one of great simplicity, and must continue to be pursued so long as it shall be esteemed desirable for the materials adapted to advance our knowledge of medicine derived from the experience and investigations of the individual members of our profession shall be promptly incorporated with the general fund of medical knowledge.

In the several sections, or histories, as the author styles them—each one of which is devoted to a single subject—we find nothing that is absolutely original, though much that is interesting. It appears to us that the author has added but little to our knowledge of the especial subjects of which the work before us treats.

It is scarcely to be supposed, however, that, in a collection of clinical observations related with the same candor and honesty of purpose as are those before us, there should not be found some useful facts—some instructive hints, which if not, strictly speaking new, are, at least, adapted to illustrate, verify, and enforce truths already known. It is certain that many such facts and hints occur in the Clinical Histories of Dr. Day.

The first history treats of "*Cerebro-Spinal Meningitis.*" Showing its identity with the so-called spotted fever, and discussing its general pathology, and its supposed causes, with an effort to remove the uncertainty which surrounds the question of its treatment. We cannot see, however, that the histories adduced by Dr. Day throw any new light upon the nature of the disease or upon its management.

The second history is devoted to a description of a very interesting, and rather unique, so far, at least, as concerns its termination, case of "*Ovarian Disease.*" The ovarian cyst burst and its contents were discharged through the stomach, the patient finally recovering completely.

A married woman, 43 years of age, the mother of many children, was admitted into the Stafford Infirmary, February 3d, 1862. She was suffering under

ovarian dropsy, which, as she stated, had commenced four years previously. She presented a jaded and cachectic appearance. Her lower limbs were œdematous, the abdominal walls were enormously distended, the ovarian tumour, which evidently contained a fluid, seemingly pressed upon them throughout their entire extent. The surface of the tumour was uneven and marked by many sulci or grooves. The bowels were obstinately costive. At intervals there occurred paroxysms of severe pain. No appetite; sleep uncertain and disturbed; breathing difficult; pulse small, weak, rapid—about 98; menstruation irregular, the discharge of a somewhat offensive odour. *Diagnosis;* multilocular ovarian tumour, with considerable adhesions. The patient was decidedly opposed to the performance of an operation. She had chlorodyne given her at night, which soothed her sufferings. The costiveness was relieved by mild purgatives and simple enemata. The diet directed was any her stomach, which was very irritable, could retain and digest. No trace of albumen in urine. It was high-coloured, of a specific gravity of 1.025; reaction acid; deposited large quantities of lithates. The patient continued, with little change, excepting increased weakness, until March the 8th, when, during the day, she complained of great pain in both the abdominal and epigastric regions; this she had previously suffered. Early on the morning of the 9th she became very sick with aggravation of pain. She soon began to vomit large quantities of a thick glutinous fluid, darkish green in colour, exactly similar to that which follows the tapping of an ovarian cyst. The vomiting continued for twelve days, giving discharge to not less than two or three gallons of the fluid described, in which was occasionally detected a flaky kind of matter, not unlike coagulable lymph, and sometimes small masses of more solid matter. The stomach not retaining any food, the patient was nourished by means of beef-tea injections, &c. To allay the sickness of stomach, dilute hydrocyanic acid with saline effervescents, &c., was prescribed, but without any good result.

As the vomiting continued the circumference of the abdomen diminished rapidly. On the 21st the vomiting ceased, and a little food was retained on the stomach. Up to the 27th she gradually and steadily improved. She took light, easily-digested food with a relish; slept tolerably well; expression of countenance greatly improved; pulse became gradually stronger and firmer; bowels acting without the aid of aperients. Improvement continued until the 28th, when the patient was attacked with double pneumonia; the inflammation chiefly confined to the lower lobes of the lungs. Cough incessant with copious expectoration; sputa rust-coloured; pulse weak and rapid. She was placed for many hours on large doses of ammonia, plenty of beef-tea and wine. No improvement ensuing, her chest all round was wrapped in a large warm poultice of flaxseed meal. The relief afforded by the poultice was marked and prompt. The patient fell asleep soon after it was put on, and slept for several hours. The poultice was continued for several days. From this time she daily improved. She was discharged convalescent May 1st. There was still a tumour on the right side, midway between the umbilicus and groin. It was of the size of a large orange, with an irregular surface, and painful when pressed on. The legs were still slightly œdematous. She attended as an out-patient for about two months; both the œdema and the remains of tumour constantly diminishing. It was ascertained in 1864 that she had recently died—not from ovarian disease but from fever.

The lymphlike matters discharged by vomiting in this case, when examined by the microscope, were shown to be structureless in appearance; there was nothing discovered resembling an acephalocyst. The fluid was loaded with albumen, with a specific gravity of 1.022—sometimes much higher. It was at first too thick to allow of the ready use of the hydrometer.

In the third history, the subject of which is "*Secondary Cancer of the Lung*," the details are given of a series of experiments performed by Dr. Richardson, to determine whether the fluid expressed from cancer growths is capable of producing locally cancer when introduced in the healthy tissues of animals. The experiments were communicated by Dr. R. to the Medical Society of London, during its session of 1859–60, but never before published. The experiments prove, so far, at least, as negative evidence can prove, that cancer cannot be

introduced into the human system, nor propagated from one portion of it to another simply by inoculation.

The fourth history is on the "*Treatment of Acute Rheumatism by Blisters.*" After the relation of six cases in proof of the efficacy of this plan of treatment, Dr. D. remarks that, after the proof he has had he cannot hesitate to express his belief that blisters will be found a most valuable adjunct in the treatment of a most troublesome and for the most part painful malady. In every case he has tried them the relief from the rheumatic pain has been immediate and most commonly permanent. In no case has peri or endocardial inflammation supervened. None of Dr. D.'s cases, however, were treated by blisters alone. He is convinced that every case of acute rheumatism should be treated on its own merits. Each case may require some modification in its management, and *special* remedies must all be used to some extent in an empirical manner until the special pathology of rheumatism is better understood. In the words of Dr. Fuller, "What we want is far less the discovery of any new remedies, than the adaptation of our present remedies to the exigencies of each case."

The only inconvenience that has been observed to result from the blistering treatment has been the occasional length of time which elapses before the vesicated surfaces heal.

The effect upon the urine of blistering is very marked, we are told. However acid before the blisters are applied, the urine becomes, speedily after their application, either alkaline or neutral, and this too, in cases where no alkaline substance had been administered.

On "*Rheumatic Fever without Pain*" is the subject of history or section fifth. Whether the cases detailed by Dr. D. under this head were rheumatic in character, it is very difficult to decide with certainty, inasmuch as there is as yet no positive agreement among physicians as to the true nature and diagnosis of rheumatism. To call them cases of rheumatic fever is certainly a misnomer; they present none, so far as we can see, of the pathognomonic signs of fever. Dr. D. concludes his remarks upon painless rheumatic fever by expressing his opinion that a close attention to the state of the spinal nerves in both acute and subacute rheumatism, coupled with a carefully conducted experimental inquiry, wound tend, ere long, "to show that this very common and very intractable malady is infinitely more dependent on primary changes in the nervous system than has ever hitherto been imagined by any excepting our American medical brethren." The dependence of some, at least, of the forms of disease that have been arranged under the vague term rheumatic upon certain morbid conditions of the spinal cord, cannot, we think, be any longer called into question.

In the sixth history, Dr. D. has attempted to show that "Chorea" is in many cases dependent on spinal irritation. The correctness of this position, though far from being proved by the observations of Dr. D., is nevertheless, we feel assured, a perfectly tenable one. As the author well remarks, between the numerous cases of chorea in which the irregular muscular movements are easily arrested, and those in which they are persistent and the disease often terminates unfavourably, there must necessarily be either the operation of a different cause, or the action of the cause, if the same, must be modified by some peculiar conditions. Dr. D. believes that in the milder and more controllable forms of chorea there are merely functional disturbances, the result most probably of sympathy without any active inflammatory action, while in the graver attacks there is *always* going on a local lesion of a severe character. True, the former might possibly run on into the latter; the experience of Dr. D. would almost lead him to say that such is rarely the case. In the cases he has seen there has always been a very wide difference in the *kind* of spasmodic action in the two forms of the disease alluded to. In the milder and sympathetic state—that of mere functional disturbance, the movements, although certainly spasmodic, have been *grotesque* in their form, giving an impression that they were rather exaggerated natural motions, to a certain extent controllable, whilst in the severer forms all control is evidently gone, and the spasmodic affection seems to partake of the nature of tetanus.

From history or section seventh, the subject of which is "*Pelvic Hæmatocele,*" we copy the following remarks: "There is great diversity of opinion as to the

propriety or not of puncturing in a case of hæmatocele. Some are disposed to puncture if the tumour be extra-peritoneal, and to adopt a different or rather an opposite course if it be intra-peritoneal. But the cases are many in which you cannot possibly tell which of the two positions the tumour occupies. Others are not inclined to resort to the trochar unless *compelled* to do so by the urgency of the symptoms. This, I own, is my feelings on the subject, and upon it I acted in E. P.'s case. With the result I had no reason to be dissatisfied."

We might run through the remaining six histories, on epilepsy from peripheral irritation; and from hepatic congestion; on alternating leucocythemia and leucocythemia generally; hysterical facial paralysis; and cardiac apnœna—formerly called angina pectoris. From each we might perhaps cull an observation which, if not precisely new, is worthy of especial notice. From the foregoing notice of the work, however, our readers will be able to form a tolerably correct idea of its character, and of the nature and extent of the author's contributions to the general fund of medical knowledge. D. F. C.

ART. XXI. — *Contributions to Assist the Study of Ovarian Physiology and Pathology.* By CHARLES G. RITCHIE, M. D., Fellow of the Royal Medico-Chirurgical Society, Member of the London Obstetrical Society, Corresponding Fellow of the Edinburgh Obstetrical Society, etc. 8vo. pp. 208. London, 1865: John Churchill, and Sons.

IN this excellent monograph, Dr. Ritchie maintains that active changes are incessantly taking place in the ovary from the earliest to the latest period of life; that both before and after puberty, during pregnancy and lactation, during amenorrhœa, and even after the final cessation of the menses, vesicles are constantly being formed in the ovary, and constantly perishing. He endeavours, also, to show that ovarian cysts may be produced in many different ways, each morbid process being a modification of some physiological action occurring normally in the ovary; that these cysts are occasionally "moles" or ova which have undergone a certain amount of development; and that dermoid cysts are certainly derived from an ovum, and have little in common with that form of subcutaneous dermoid cyst not unfrequently met with in the region of the eyelids.

The first chapter contains an interesting historical sketch of the progress of embryology from the remote time of Hippocrates down to the year 1844. The next two chapters consist of a reprint of a paper on the physiology of the human ovary, contributed originally to the *London Medical Gazette* of 1843–45, by Dr. Ritchie, of Glasgow, the father of our author.

The following conclusions arrived at, by the senior Dr. Ritchie, in the course of his researches, are also strongly advocated by his son.

"1. The Fallopian tubes of the infant, and of the child before puberty, are perfect in their structure, although their patency is more or less obstructed at birth by the presence in them and in the uterus of a tenacious glue-coloured mucus.

"2. The ovaries of new-born infants and children are occupied, sometimes numerously, by Graafian vesicles or ovisacs, which are highly vascular as early as the sixth year, and vary in size from the bulk of a coriander-seed to that of a small raisin, in the fourteenth year, at which time, also, they are filled with their usual transparent granular fluid.

"3. The Graafian vesicles contained in the ovaries prior to menstruation are found, as they also are in every other period of life, in continual progression towards the circumference of the glands, which they penetrate, discharging themselves by circular-shaped capillary-sized pores or openings in the peritoneal coat; the presence of the catamenia being thus no indispensable prerequisite to their rupture.

"4. The establishment of menstruation does not necessarily give rise to any immediate modification in the manner in which the ovisacs are discharged, or in the subsequent change which these bodies undergo; but in some cases the

conditions which obtain in the period before puberty are extended for a time, into that of menstruation.

"5. The ovisacs of the human female do not require the establishment or presence of menstruation for their development or rupture. Vesicles of adult size may exist and be discharged about the age of puberty as also at other periods of life, independently of menstruation; and this state may be present in its normal form for at least eight consecutive periods, without a vesicle being ruptured, unless after the manner, and with the phenomena which occur in childhood.

"6. In early infancy, extreme old age, and long-continued organic disease, the ova are minute, transparent, and structureless cells; and in advanced childhood, soon after the critical age, and during pregnancy and lactation, they are more or less organized, larger, and in the latter state are often so well maturated, that about one-third of the renewed pregnancies of married women take place while they nurse.

"7. In children and others in the circumstances now mentioned, the exercise of organic power which occasions the secretion and extrusion of ova, is attended also by that of an opaque mucous fluid in the tubes and uterus; but on the attainment by the female of maturity, and onward to the period of critical life (when the animal powers become again diminished, and the calibre of the arteries reduced), the ovarian orgasm, like many other vital actions, undergoes periodical augmentations of power, during which, unless when prevented by the disturbing influence of other functional processes or by disease, it extends to the nervous and vascular tissues of the uterus, and gives rise to the formation within this viscus of decidual vessels, which exude lymph and red globules, the latter being evacuated, mixed with watery fluid, mucous matter, and some of the salts of the blood, in the form of menstruation.

"8. That the periodical congestion or increase in size of the ovaries before and at the usual menstrual terms is not caused by the presence or bursting of ripe vesicles, is plain from the consideration that the ovaries are often crowded with such, some of which also occasionally give way, and empty themselves by capillary-sized openings in the surface of the glands in women who have never menstruated; and in others who have ceased to menstruate, one and two large and fully-developed vesicles are frequently seen.

"9. The elimination of ova, and the process of menstruation, are correlative effects of the vital powers of the ovaries (just as the secretion of mucus, and of gastric juice, and the chymification of the blood are those of the stomach); and to suppose the rupture of the Graafian vesicles to be the cause of the menses, is to mistake a frequent association, and, to some extent, effect for a uniform cause.

"10. The principal use of menstruation is, in regard to the ovary, to provide an accessory by which the maturation of its vesicles, and the absorption of their peritoneal and tenacious proper coats, and their extension generally, may be promoted throughout the child-bearing period of life; and, in reference to the uterus, to furnish a nidus within its walls by which the ovum may be entangled, retained and nourished.

The last two chapters of the work before us are devoted to ovarian pathology.

J. A. M.

ART. XXII.—*Temperature in Acute Disease.*—Being a thesis read for the Degree of Doctor in Medicine, before the University of Dublin, June 26, 1866. By THOMAS ARMETRIDING COMPTON, M. D.; B. A. Corpus Christi College, Cambridge, &c. &c. &c. 8vo. pp. 22, with 9 diagrams. London: John Churchill & Sons, 1866.

THE indefatigable labours of Prof. Wunderlich, of Leipsic, with the clinical thermometer and the admirable papers by Drs. Aitken, and Sidney Ringer, have attracted much attention recently, to the value of that instrument in diagnosis and prognosis in certain diseases.

Dr. Compton has investigated this subject with much industry, and his results are of great practical interest. His thesis is divided into two parts. In the *first* he treats of the practical value of accurate daily observations on the temperature of the body in acute diseases; the *second* is devoted to the consideration of the course of temperature and pulse in typhus and typhoid fevers, and some of the points of difference between these two fevers shown thereby.

Dr. C.'s general conclusions have been arrived at, after a careful study of some 125 cases taken by himself during two years at St. Bartholomew's hospital, and also of seventy-five others taken in the same hospital by Dr. Warter. The total number of cases in which the temperature and general symptoms have been watched and recorded daily throughout their course, amounts to 200, of which sixty are typhus, thirty typhoid, twenty pneumonia, fifteen scarlet fever, and the remaining seventy-five comprise cases of febricula, acute rheumatism, erysipelas, chorea, acute tuberculosis, &c. The total number of observations in these cases, and in others in which only one temperature has been recorded by Dr. Warter or himself, probably exceeds 5,000.

The observations on temperature were taken with the thermometer in the axilla once daily, but always at nearly the same hour—about two o'clock P. M., at the same time noting the state of the pulse, skin, respiration and general symptoms.

In speaking of normal and abnormal temperatures, Dr. C. states that he considers the approximately normal temperature of the axilla in a healthy adult to range between 95°.5 and 98°.5 Fahr., the most common temperature being probably 97°.4 Fahr., which is one degree less than that usually considered as the normal one.

The propositions which Dr. C. wishes to establish are the following:—

"1st. That a continued daily temperature of 99° Fah., and upwards, indicates an unhealthy condition, and occurs in every case of acute disease. As I have never met with one case in which such a temperature was present, under normal conditions, in a healthy adult, and as every case of the 200 taken exhibits this state of temperature, the proposition may be considered to be proved.

"2d. That any one observation of a very high temperature (such as 105° Fah.), in any case in which the general symptoms do not appear of any particular severity, should lead to a very attentive re-examination, and suggest a very careful watching, especially if occurring in a non-diagnosed case; such a temperature being present only in severe forms of any disease.

"3d. That the thermometer is of great use, as a means of diagnosis in those cases, which frequently present themselves, of general *malaise*, often accompanied by a history of rigors, loss of sleep, &c.; such symptoms being due either to the commencement of some acute disease, or merely to some gastric or uterine disturbance of a temporary character.

"In these cases it is often at first impossible to decide, judging only from the pulse and general symptoms; but if the state of the patient be due to the more serious cause, we shall invariably find an abnormal temperature; and on the other hand, if due to any other, a normal temperature, will be often met with, frequently accompanied by a very rapid pulse. I have never met with one case in which, the temperature being normal, any acute disease afterwards developed itself.

"4th. That the temperature in every disease has a tendency to run a peculiar course, and has a certain range of altitude, a knowledge of which course and range is of great value as an assistance to us in diagnosis and prognosis.

"In connection with this proposition I should observe that I have not found the temperature in acute disease to be perceptiby affected by the season of the year, at which the disease may have occurred, although the temperature of the wards during the year has varied to a considerable extent.

"Again, if cases of similar severity at different ages be compared, the altitude attained by the temperature in any disease does not appear to be influenced by the age of the patient, although 'the normal' is generally reached somewhat earlier in children than adults.

"5th. From the last proposition it follows, that the same altitude of the thermometer attained at one period of any disease is not of the same importance as the same height reached at another time in the same disease.

"Thus, in typhoid fever, a temperature which has been rising for two or three days, reaches perhaps 104° Fah. between the seventh and fourteenth days, without causing any anxiety; whereas should the same phenomenon occur about the twenty-eighth day, a fatal termination might probably be expected.

"And again, the actual altitude attained on a certain day in one disease is not of the same importance to our prognosis as the same height reached on the same day in another disease. Thus, a temperature of 104° Fah. in erysipelas is very common during the first week, and need not give rise to any alarm: but should such occur at the same date in acute rheumatism I should consider it of much more importance.

"6th. That although, in all diseases, a high range of temperature generally indicates a severe case, with a slow convalescence, and a low range usually occurs in a mild case, and is followed by a rapid convalescence; yet there is no actual temperature in any disease which necessarily foretells a fatal termination. Thus I have registered 105°.6 Fah. in a severe case of typhus ending favourably, 106°.3 Fah. in erysipelas, 105°.3 in typhoid; and each of these temperatures was the highest I ever took in the respective diseases.

"I certainly once registered a temperature of 107°.2 Fah., in a fatal case of pneumonia; but the great majority of fatal cases generally, although always exhibiting abnormal temperatures prior to collapse, have by no means had any extraordinarily high ranges. I believe that an abnormal course of temperature is more often the precursor of a fatal termination than any universally high range.

"7th. That in the majority of cases a rise of temperature is contemporary with a rise of pulse, but that on the other hand there appears generally to be but little connection between temperature and frequency of respirations.

"The alteration in the pulse with a change of temperature is often not a proportional one, and may not take place at all unless the variation of temperature be as much as 2° Fah.

"8th. That where the temperature and pulse together do not coincide with the general symptoms, the two former may be generally relied on as to the actual state.

"9th. That where the temperature and general symptoms agree together, but do not coincide with the state of the pulse, the two former may generally be relied on as to the actual state.

"Thus in cases of hysteria, and in cases of excitable persons approaching convalescence after fever, we often suddenly get a very high pulse, which is sometimes continuous for days, although the temperature and general symptoms are neither of them adverse.

"10th. That in those cases in which the pulse and general symptoms remain the same, a moderate fall of temperature on one occasion is not to be relied on; but should such a fall continue in a moderate and gradual manner, for some days, and at such a period when a fall was to have been expected, the temperature may then be depended upon. Severe cases of typhus, towards their close, often give examples of this sort.

"In those cases, however, in which the pulse continues frequent, and the general symptoms are severe and without improvement, a considerable fall of temperature (say 5° or 6° Fah.) is to be regarded with anxiety, being probably due to some internal hemorrhage, or to the commencement of a state of collapse.

"11th. That in those cases in which the pulse and general symptoms continue the same, being the one frequent and the other severe, a continuous rise of temperature for some days, occurring at a period of disease at which some improvement might generally be expected, is usually the precursor of a fatal termination.

"Thus, in a case of typhoid fever, terminating fatally on the thirty-sixth day, the pulse and general symptoms continued without change until the thirty-fifth day; the former having stood at 92 on the twenty-ninth day, remained steady and rather below that frequency until the thirty-fifth day, when it suddenly rose to 124. The temperature, however, rose continuously from the twenty-ninth day, nearly a degree a day, until it stood 5° higher on the thirty-fifth than on the twenty-ninth day—the height registered on the thirty-fifth day being 104° Fah.

"12th. That although it is possible that the state of the temperature alone in acute disease may, perhaps, hereafter prove to be the one safest symptom to rely upon if taken by itself (and I believe it is at present, at least, equal to the state of the pulse, and of greater value than this certainly, if only its frequency be taken into account), yet the temperature must be considered merely as an aid, and all other symptoms must be carefully examined into, as it is on comparison with these that its greatest value is always to be found."

Dr. C. sums up the differences most frequently observed between typhus and typhoid fevers, so far as their pulses and temperatures are concerned, as follows:—

"1st. The maximum temperature attained during the course of either disease, about 2 P. M., is somewhat lower in typhoid than in typhus fever, but a continuous abnormal temperature is of much longer duration in the former than in the latter.

"2d. The defervescence of typhus is regular and continuous, the temperature falling generally about a degree a day, until the normal is reached; whereas in typhoid, the fluctuations from day to day are considerable, and the fall is not a continuous one daily.

"3d. There is a great tendency in typhus to attain certain temperatures, and to reach certain points in its course, on certain fixed days. Thus, in the great majority of all cases, a temperature of about 104° Fah. is met with on the seventh day; in a very large percentage the maximum is reached on the seventh or eighth days; 'the normal' is generally attained, in mild cases, on the twelfth or thirteenth days; and in more severe ones between the fifteenth and eighteenth days.

"In *typhoid* there is no particular temperature generally arrived at on any one day; the maximum may be reached at any time between the seventh and twenty-first days; and 'normal' is attained, in mild cases, between the fifteenth and twenty-first days; whilst, in the more severe ones, it may be attained on any day between the twenty-fourth and thirty-fifth.

"4th. The pulse is generally less frequent in typhoid; and although in both fevers the pulse usually fluctuates with the temperature (about five beats of pulse corresponding to each degree of alteration in temperature), the frequency of the pulse in the two, for the same degree of altitude, is different.

"Thus, with a temperature of 100°.5 Fah., we generally find an average pulse, of about 105 in typhus, but of only 95 in typhoid, and so on; at each degree the pulse being about ten beats more frequent in typhus than in typhoid. Moreover we sometimes meet with a case of typhoid fever in which the pulse very slightly exceeds 'the normal' throughout, but such a case I have not observed in typhus.

"5th. In typhus the temperature reaches normal two or three days before the pulse, and the general symptoms often continue severe several days after the pulse and temperature are both normal. In these cases, however, if the defervescence has been regular, and has occurred about the usual period, the case will terminate favourably, notwithstanding the often very unfavourable condition of the patient.

In typhoid, on the other hand, as I have before mentioned, the temperature keeps up several days after the general symptoms have been considerably improved, and we must look, with doubt rather than otherwise, on cases in which this rule appears about to be broken—that is, on cases in which the general symptoms continue severe, although the temperature is but little, if any, above 'the normal.'

"6th. Relapses of typhoid have occurred in 12 per cent. of all cases, and in these the temperature ran a somewhat similar course as in the former attack, although 'the normal' was attained at an earlier date.

"Relapses of typhus, with a corresponding recurrence of abnormal temperature, have never been met with, although the number of cases of typhus under observation has been double that of typhoid."

Appended to this brocure are nine diagrams, showing the variation on different days of the temperature, pulse, and respiration in cases of pneumonia, acute rheumatism, facial erysipelas, tonsillitis, scarlet fever, mild and severe form of typhus fever, mild and severe form of typhoid fever.

ART. XXIII.—*Sobre Alguns Symptomas da Diabete. Lição Clinica Feita na Escola de Medicina de Lisboa.* Pelo Dr. ABEL JORDAO, Lente na Mesma Escola. 12mo. pp. 13. Lisboa, 1866.

On some Symptoms of Diabetes; a Clinical Lecture delivered in the Medical School of Lisbon. By Dr. ABEL JORDAO, a Professor in the School.

We propose to lay before our readers a brief summary of this interesting lecture. Perpetua dos Santos, aged 24 years, the subject of this case, presents some symptoms worthy of especial notice, since little or nothing in regard to them is known. The patient having suffered some time from intermittent fever, immediately after the disappearance of the attack observed that appetite and thirst, until then normal, became excessively augmented. Diabetes followed the attack of intermittent.

Dr. Jordão says that this is not the first case in which he has seen diabetes developed after intermittent. In three patients he has verified this etiology of the complaint, and he refers to the *Acta erud Lipsiæ* of 1696, in which will be found a similar case reported by Scaramuci. There is then, he conceives, a relation of causality between these two morbid conditions, and that this is farther confirmed by physiological experiments.

During (Dr. J. says) attacks of intermittent, and following them, Mr. Bourdel de Vierzon observed the presence of sugar in small quantity in the urine, and he asks, "Why does such a symptom appear in intermittents?" The explanation is, according to Dr. J., easy, conceiving that intermittent attacks are irritations of the sympathetic nerve, followed by its unavoidable paresis. During its paroxysms there is hepatic congestion, similar to that which obtains from paralysis of the sympathetic in physiological experiments. In the experiments the appearance of glycosuria is constant; what wonder, then, that the same happens in the pathological case? Doubtless the mode in which these two phenomena are produced, are identical. Physiological experiments, compared with morbid facts, give us the key to the etiology of certain diseases. Formerly the case was inexplicable; now, according to our author, its explanation is found in the progress of physiology. In intermittents the sympathetic is paralyzed; the same occurs in diabetes. In the first the phenomenon is temporary, in the second almost continuous; in both cases sugar appears in the urine—in one temporarily, in the other continuously. Intermittent, if we may be allowed the term, is the microscopic *photograph* of diabetes.

If these reflections are not sufficient to produce conviction, regard the third case of my clinic, in which diabetes was consecutive to intermittent.

Let us now (says Dr. J.) examine some of the symptoms. Early in the disease the patient, besides attacks of hæmorrhoids from which he then suffered, complained of having lost blood by the rectum months after the appearance of diabetes. These rectal hemorrhages often depend on hæmorrhoids; at other times they seem to be essential. The first condition is that of our patient. If we had not scrupulously observed this symptom, as we have in different diabetics, we might say, as all physicians do, that the diabetes in the present case was the result of suppression of the rectal hemorrhage. The ancients had observed the fact, as we have done, but they neither verified nor appreciated it. I have seen individuals with the appearance of good health, suffer from rectorrhagia, in whom, subsequently, the hemorrhage being suppressed, decided symptoms of diabetes appeared, and hence the effect was attributed to this cause. This occurrence is sufficiently frequent, but, since in very rare instances of diabetes it is absent, it is believed its true interpretation is other than that accepted up to the present time.

Physicians who place rectorrhagia in the etiology of diabetes are deceived, because they are not aware that the appearance of good health and fatness are almost always present in the first period of the disease. They therefore think that diabetes is not the cause of the hemorrhage, and that the latter precedes it. I repeat, then, that diabetes is anterior to this symptom, which is an effect, and not a cause of the disease.

Besides the cases in which this phenomenon is a consequence of hæmorrhoids as in the present instance, there are others of true enterorrhagias which I call *essential*, in opposition to those I have indicated. I do not know that they are in fact essential; it is possible, and perhaps even probable, that they proceed from varicose dilatation of the intestinal veins. I do not attach much importance to this term. The idea which may be formed in this respect is, that in this disease there is a hemorrhagic tendency, and that the obstruction of the circulation through the liver facilitates these varicose dilatations of the intestinal veins, as happens in the gouty, who almost always suffer from hæmorrhoids. As these dilatations form in the inferior extremity of the rectum, or higher up, we have the two species of rectorrhagias. It is proper to say, however, that in rare cases I believe that the hemorrhagic diathesis alone will explain the fact. This tendency to hemorrhage really exists, I judge, only in the first period of the disease.

I have seen two instances of epistaxis in the beginning of the affection. Messrs. Kunkler (*Union Méd.*, 1861, p. 137) and Leudet also mention two cases; and Frank reports a case in which is pointed out the frequency of the phenomenon *before* the *recognition* of the disease—that is, at a period when the existence of the diabetes might be supposed, since, when it comes to be diagnosticated, it is already much advanced.

There are other phenomena in the early stages of diabetes, which also prove the presence of the diathesis. The facility with which blood flows from the gums in consequence of any mechanical irritation—as, for example, the removal of teeth; the taste of blood, almost always accompanied by a light, rose-coloured saliva, which diabetics experience on rising; sanguinolent pustules which appear on the skin, as observed by Marchal de Calvi (*Moniteur des Hôpitaux*, Sept. 8, 1853), and the slight sub-epidermic hemorrhages noted in different parts of the body, chiefly in the hands and arms, are more than sufficient proofs. This last circumstance is not noted by authors, but it is certain that beneath the epidermis small, isolated, rose-coloured spots, of two or three millimetres in diameter, may be seen, in which there are small varicose vessels, and around them extravasated blood; in time these spots become yellow, leaving the vessels perceptible, and finally they disappear, leaving the vessels still visible for a period.

At times hemorrhages are observed in the retina. Messrs. Follin and Lècorchè suppose that they are manifest only when diabetes is complicated with albuminuria, but our distinguished ophthalmologist, M. Mendes, has seen a diabetic with this lesion, who was free from albuminuria.

I insist upon this relation between rectal hemorrhages and the particular hemorrhagic diathesis in diabetes, because I believe I am the first to point it out. I have alluded to the healthy and plump aspect of diabetics in the first stage of the complaint; and now is a fitting occasion to say something in relation to it. Our patient seems not to verify this statement; nevertheless I think proper to discuss the point to enable you to avoid many errors of diagnosis. When diabetes is chronic in its progress, diabetics grow fat, and the reason of the phenomenon is easily understood. When we wish to fatten an animal, we give it feculent and sweet substances in abundance. Through such means we succeed, in proper time, in fattening domestic animals—the hog, for example. The same occurs in the diabetic, who, in the beginning, has an excess of sugar and carbonaceous substances in the blood, which the organism cannot burn, but is still able to convert into fat. This fact has given rise to an error on the part of Messrs. Landouzy and Marchal de Calvi. These distinguished physicians suppose that the *robust, fat* constitution, is a cause of diabetes; but, I think, erroneously. A robust, adipose constitution is not a cause, but an effect of the complaint. I have seen some cases of lean individuals attacked with diabetes, who commenced to fatten, and in a short time presented a fair aspect of health. During the first period of diabetes, patients entirely deprived of feculents become lean, but on allowing them a moderate use of these substances, they again acquire fat.

These ideas, which I presented in 1864, have just been confirmed by Mr. Harley, of London. This aspect of health in such patients often diverts the

attention of the practitioner; therefore it is always prudent to examine the urine of individuals who are in this condition, and at the same time complain of want of strength inconsistent with their good appearance.

Observe the leanness of this patient, chiefly of the arms and belly. You see there is no relation between the leanness of the arm and of the forearm, nor between the belly and the rest of the body. In these regions there is muscular atrophy; in the arm you almost touch the humerus, but in the forearm the muscles are distinctly felt; in the belly the intestines are beneath the fingers, and, if attentively observed, their outline may be perceived through the abdominal parietes by their peristaltic motions. In this case there is not only an absence of fat, but also a want of muscular resistance to palpation. Although I have often observed this symptom, I find it nowhere noticed.

The intellectual lesions in this patient are quite curious. Perpetua dos Santos is extremely impatient—almost insupportable; weeps readily; often imagines that they seek to kill him, or that he is about to die; at intervals is truly delirious, destroying the bedding, having, on these occasions, tonic convulsions; at times vertigo is also manifest. These vertigos are not rare; Frank and others speak of them. The lesions of intelligence presented by this patient are characteristic, and sooner or later almost all diabetics are affected by them. Memory diminishes, cheerfulness is almost always lost, and individuals become sad and apathetic. I have seen many such instances. Irascibility is common; hallucinations and delirium, as seen in this patient, are more rare.

This case presents many and various nervous phenomena, neuralgic pains of the nucha and teeth, rheumato-neuralgic pains of limbs. Neuralgias are most frequent in the intercostal and sciatic nerves, but, in my opinion, the first are most frequent. A diabetic manifestation observed in this case is furuncles.

W. S. W. R.

ART. XXIV.—*A Treatise on Emotional Disorders of the Sympathetic System of Nerves.* By WILLIAM MURRAY, M. D., M. R. C. P. Lond., etc. etc. 8vo. pp. 118. London, 1866.

THIS is quite an interesting essay, and on a subject of no slight importance, whether considered in its relations to the prophylaxis of a very large class of diseases of every-day occurrence, or to the elucidation of their symptomatology and therapeutics when present.

The influence, either for good or for evil, that is exercised upon the different parts of the human organism by the emotions, passions, appetites, and desires, and the influence, on the other hand, which even slight abnormal conditions of the several organs exert over the emotions, appetites, and desires, has been recognized even by the non-professional observer, while it is a fact of which every intelligent physician is fully cognizant.

The influence exercised upon the emotions by disturbed states of the viscera is less patent to the public generally than is the influence exercised by the emotions upon the healthful play of the proper functions of the individual organs. From an ignorance of how much of mental suffering, of irregularity of temper and of eccentricity of character, is directly due to disordered conditions of those portions of the organism which are most under the dominion of the ganglionic system of nerves, the non-professional observer is constantly led into errors of judgment, too often attended by results the most mischievous.

While the great body of the medical profession are perfectly familiar with those disorders which usually accompany too violent, or otherwise disturbed conditions of the mind, but few of its members understand aright the manner—the physiological relationship by which this connection between mental disturbance and visceral disease is brought about. To explain the nature and the mechanism of such connection; to show that it is the result of a relation exist-

ing between the emotions and the diseased viscera, through the medium of the sympathetic system of nerves, is the leading object of the work before us.

The author has, it is true, attempted scarcely more than to furnish a mere leading outline of the subject. So far as it goes, however, the exposition of Dr. Murray is replete with interest. Pursuing a correct and well-defined line of investigation, he has prepared the way for a fuller and more complete examination of the subject. The more it is examined, the more important it will be found, whether viewed in reference to its medical bearings, or to its connection with the well-being and happiness of man.

Upon the effects which are exercised by emotions upon the cerebro-spinal system of nerves, Dr. M. has only touched slightly. His leading object throughout has been to select the phenomena which tend most to establish the position that the emotions affect the viscera, and the viscera the emotions, through the sympathetic system of nerves.

"To mark distinctly," he observes (Pref., p. vii.), "the line which separates the phenomena which are cerebro-spinal from those which are sympathetic is impossible. As, however, some broad distinctions can now be drawn between the functions of these two divisions of the nervous system, the time has arrived when we ought to avail ourselves of this knowledge in studying emotional disorders, so as to determine those conditions of the mind and body which attach themselves to the one or to the other system of nerves."

The treatise of Dr. M. is arranged in two sections. The first being devoted to a brief consideration of the physiology of the subject, and a general review of the influence exerted by the emotions upon the organs of the living body, through the medium of the sympathetic system of nerves; while, in the second part is presented a sketch of emotional diseases; in other words, of the "various mental effects produced by a diseased or exhausted condition of the visceral system of nerves, and the lesions of the viscera which lead to these morbid conditions of the nerves," followed by a chapter upon the prevention and treatment of these lesions.

Dr. M. has not attempted any elaborate classification of the emotions. After a careful effort, he found that it was not easy to allot to any one of the emotions, a series of effects sufficiently special and distinct to enable him to identify it by its action on the living organism. He has, consequently, indicated the character of the emotions under two heads. The first embracing those whose effects are pleasurable and beneficial. In the second, are included those emotions, the effects of which are painful and injurious. He has not, on this account, distinguished with much nicety between appetites, desires, emotions, passions, etc., each of these being held to be a variety of that flow of nervous force which is continually moving throughout the visceral regions of the body. Throughout, the terms expressive of the emotions are used in the sense popularly attached to them. This has been done, Dr. M. remarks, with the view of appealing to the common sense and experience of the reader, at the risk of incurring the severe criticism of the precise psychologist.

The emotional affections noticed in the second part of the treatise are, 1st. Those of the digestive organs, with a brief notice of hypochondriasis—imaginary diseases, etc. 2d. Those of the generative organs, including a sketch of nymphomania, masturbation, hysteria, miscarriage, etc.

The short chapter on treatment is replete with useful hints. It is far too concise, however, and too general in its teachings, to serve as a useful and satisfactory exposition of the therapeutical management of so large and important a class of diseases as are those attended with emotional distress.

We recommend the entire treatise to the notice of the American physician. From a careful perusal of it many a valuable hint will be derived—the development of which, by careful and repeated observation, cannot fail to supply an important want in our knowledge of the etiology and true character of many affections vaguely denominated nervous.

As a fitting close to this notice of a work which, short as it is, has interested us much, we present the following summary of the author's teachings in his own words:—

"*Proposition I.* The emotions injure the body most commonly by their effects

upon the viscera, through the sympathetic system of nerves. *Proved, a.* By comparing the action of emotion on bloodvessels, non-striped muscles, and glands in *external* parts, with the established functions of the sympathetic nerves supplied to these parts, the two are found to be identical. *b.* Effects which cannot be produced by volition or cerebro-spinal nerves in these parts, are easily produced by emotion and sympathetic nerves; therefore, emotions act on those parts through the sympathetic system. *c.* Symptoms occur during the prevalence of strong emotion which indicate alterations in the internal viscera, similar to those which occur in external parts, viz., changes in the vascularity, secretions, and muscular actions of those viscera which are largely supplied by sympathetic nerves; therefore, from the nature of the effects produced, and from the relation of the parts acted on to the sympathetic system, it appears that emotion acts on these parts through the sympathetic system.

"*Proposition II.* There are disordered states of the viscera which powerfully induce those emotions which are injurious to the body. These effects are produced through simultaneous disorder of the sympathetic system. *Proved, a.* There are always accompanying depression of spirits, symptoms which depend upon disordered action of the sympathetic system, *e. g.*, 'the flushings of the change of life.' *b.* Morbid emotional sensations are always referred to those regions where the great sympathetic centres lie. *c.* The capability of a diseased organ to excite these emotions is in proportion to the supply of nerves from the sympathetic system. *d.* Treatment which addresses itself to the sympathetic system, and seeks to relieve it, *e. g.*, the application of compresses on the site of the solar plexus, is undoubtedly successful in dispelling morbid emotion. *e.* The above sequence of events cannot be accounted for by disturbance of the cerebro-spinal system only. We are, therefore, driven to the conclusion that, as the medium of communication between the cerebro-spinal system and the viscera, the sympathetic system also becomes the tract through which emotion finds its way to the viscera; and, conversely, it is the channel by which the viscera influence the emotions. When the sympathetic system itself is out of order, the emotions suffer with it." D. F. C.

ART. XXV.—*A Treatise on the Principles and Practice of Medicine, designed for the Use of Practitioners and Students of Medicine.* By AUSTIN FLINT, M. D., Professor of the Principles and Practice of Medicine in the Bellevue Hospital College, &c. Second edition, revised and enlarged. 8vo. pp. 967. Philad.: Henry C. Lea, 1867.

THE extended Review of the first edition of this work which we published only nine months ago, renders a detailed account of the present issue unnecessary. It is evident that the judgment we pronounced has been ratified by the medical profession. Perhaps it would have been well had the author been allowed a longer time to weigh the suggestions made by his own reflections and by the Medical Press, before he issued the work a second time. But the exigencies of publishers are not always in accord with the judgments and desires of authors; the favouring popular wind which determines the former to spread all his sail, more frequently inspires the latter with a desire to trim his vessel as perfectly as possible, so as to make his voyage safe in its issue, as well as swift in its performance.

The present edition of Dr. Flint's Treatise differs from the first by the insertion of new matter more than by a correction of the old. Yet that the latter has not been entirely overlooked, the following quotation from the Preface will demonstrate. "The portion treating of Pyæmia has been rewritten; three affections, omitted in the first edition, have been introduced, viz., Pertussis, General Cerebral Paralysis, and Polyuria; Epidemic Cholera has been considered at greater length; the thermometric phenomena of disease have received fuller consideration, and, in connection with many affections, there has been added new matter,

much of which relates to special therapeutics." It may be judged how substantial these additions are when we state that they amount, in all, to one hundred pages.

We are happy in being able once more to commend this work to the students and practitioners of medicine who seek for accurate information conveyed in language at once clear, precise, and expressive. A. S.

ART. XXVI.—*Injuries of the Spine. With an Analysis of nearly Four Hundred Cases.* By JOHN ASHHURST, Jr., M. D. 12mo. pp. 127. Philadelphia: J. B. Lippincott & Co., 1867.

FRACTURES and luxations of the spine are, as must be conceded by every surgeon, exceedingly difficult of diagnosis, uncertain of prognosis, and most embarrassing in their treatment.

This is owing, to some extent, to the very nature of such injuries; but a great deal is also due to the necessary imperfection of individual, and the extreme meagreness of accumulated, experience. To these injuries the first aphorism of Hippocrates has been always especially applicable: opportunity passes quickly, experience is hard to seize, and judgment difficult.

To show the rarity of such cases, we will notice that Malgaigne, whose researches were very extensive, collected only forty-five cases of luxations of every kind in the cervical region, and thirteen in the dorsal-lumbar. Of fractures, he says, they are very rare; but fourteen cases were observed at the Hôtel-Dieu in eleven years. At the Middlesex Hospital, according to Lonsdale, out of 1901 fractures treated during six years, only eight were of the vertebræ; and, at the Pennsylvania Hospital, the author of the work now before us found that in nearly 4000 cases treated during fourteen years, the vertebræ were affected in but twenty-four.

In this volume Dr. Ashhurst has presented to us the accumulated experience of the profession in this obscure class of injuries. By most laborious and well-directed research he has succeeded in collecting as many as three hundred and ninety-four recorded cases. These statistics are nearly complete, and whatever may be objected to statistical arguments, it is unquestionably true that statistics of this kind are but accumulated experience, and that in this way are we best taught. *Experientia docet.*

This great experience has been applied by Dr. Ashhurst with remarkable ability and success in setting forth the nature, causes, pathological conditions, and the physical and rational symptoms of these injuries, their prognosis, and the results of different modes of treatment.

As a general rule, and indeed so far as was practicable or advisable, this has been done by means of tables, the construction of which must have demanded great labour. For treatment, which the author desired particularly to elucidate, four tables are given; the first gives a view of the treatment employed; the second, an analysis of the nature of the injuries, as regards results; the third, an analysis of the results, as regards the treatment employed; and the fourth, a comparison of the results of various modes of treatment for each region.

It is thus clearly manifest that the mortality in these injuries has been almost three times as great when general treatment only has been practised, as when attempts at reduction were made, and moreover the final result when the patient survived was less satisfactory. After resection, the proportion of deaths was nearly six per centum greater than when general treatment was adopted, and in those cases that survived, the proportion of recoveries was far less—by recovery meaning that the patient was sufficiently restored to pursue some occupation. In fact, there is not, so far, one well-authenticated instance of recovery after spinal resection.

The following are the conclusions which Dr. Ashhurst believes justifiable from

the facts brought forward. We agree with him in every one, except that in the third we would add, "and paraplegia exists," to "one or more vertebræ have been displaced."

"1. Injuries of the spine are not nearly so fatal as is generally supposed, and they have been, not unfrequently, completely recovered from.

"2. By watching carefully the symptoms and knowing the lesions which they indicate, the patient's progress towards health or death can be pretty accurately foreseen in most cases.

"3. Whenever there is reason to believe that one or more vertebræ have been displaced, extension should be employed: temporary, if that be sufficient, if not, continuous.

"4. In no case do resection or trephining offer a reasonable prospect of improving the patient's condition, but, on the contrary, there is reason to fear that they would increase the chances of a fatal termination.

"5. Those cases of spinal injury which are not adapted for the employment of extension, should be treated in accordance with ordinary rational and physiological principles.

"6. No new mode of treatment is entitled to adoption in a class of injuries so serious as this, unless it can be shown by clinical experience that it is at any rate *not less successful* than the modes commended to us alike by reason and long experience."

All the cases collected by Dr. Ashhurst he has arranged in tabular form in an appendix, under the different headings of Age, Occupation, &c.; Mode of Injury; Description of Injury; Progress of Case, etc.; Time under Observation; Result; Remarks; Autopsy, etc.; Author; and Reference. This table is a monument of surgical research, and will prove of invaluable assistance to all future investigators in this not too well-known region of surgery. This small volume—*non multa, sed multum*—is very neatly printed. W. F. A.

ART. XXVII.—*Inhalations in the Treatment of Diseases of the Respiratory Passages, particularly as effected by the Use of Atomized Fluids.* By J. M. DA COSTA, M. D., Physician to the Pennsylvania Hospital, &c. &c. 12mo. pp. 86. Philadelphia: J. B. Lippincott & Co., 1867.

THIS volume is very interesting, containing as it does the expression of the personal experience of a very careful observer—for such the author is—in regard to the therapeutic value of the inhalation of atomized fluids in certain diseases. The author began this inquiry, he states, "in the spirit simply of examining the value of the plan as a clinical problem," and has satisfied himself "of its use in some disorders, and its futility in others."

He treats in separate chapters: 1st. Of the history of inhalations and the apparatus employed. This chapter is copiously illustrated with figures of the various apparatus usually employed. 2d. The mode of administering inhalations. 3d. The penetrability of atomized fluids into the air-passages. 4th. Doses of medicine for inhalation. 5th. Therapeutic considerations.

The following are the conclusions of the author:—

"1. That inhalations by means of atomized fluids are an unquestionable addition to our therapeutic means; but that they are nothing but an addition, and not a substitute for all other treatment; that therefore their claims to be so considered are unfounded.

2. That in most acute diseases of the larynx, and still more so in acute disorders of the lungs, their value, save in so far as those of water, may tend to relieve the sense of distress, etc., and aid expectoration, is very doubtful; though in some acute affections, such as in œdema of the glottis and in croup, medicated inhalations have claims to consideration.

3. That in certain chronic morbid states of the larynx, particularly those of a catarrhal kind, and in chronic bronchitis, they have proved themselves of

value; but that they are useless or next to useless in ulcerated diseases of the larynx.

4. That in the earlier stages of phthisis they may be of decided advantage, and that at any stage they may efficiently aid in treating the symptoms of this malady; but that they are valueless to stay the disease after softening has fairly set in.

5. That their influence on such affections as hooping-cough and asthma is not satisfactorily proven.

6. That they furnish an unexpected augmentation of our resources in the treatment of pulmonary hemorrhage.

7. That the question in any disease of the respiratory tract is not whether the atomized fluids can reach the seat of the malady, but whether they can do so in sufficient quantity and in a manner to become available as a therapeutic means.

8. That in estimating the actions of inhalations of atomized fluids, we must accord due value to the ready absorption of many through the pulmonary structures, and guard against attributing to a local influence what may be due to the constitutional effect of the remedy.

9. That we cannot overlook the part the watery vapour plays when using atomized solutions.

10. That they require much care in their employ, and that particularly in acute affections we should consider whether, as they have to be used frequently to be of service, the patient's strength justifies the disturbance or the annoyance their frequent use may be.

11. That in any case, to be of service, the inhalations ought to be carried on as a treatment with a distinct object, and not intermittingly or spasmodically resorted to.

These conclusions and the remarks preceding them apply exclusively to the treatment of the diseases of the respiratory passages by atomized fluids, for though incidentally the inhalation of gases or vapours has been mentioned, it has purposely been no more than alluded to, since this subject has been long before the profession and has been often examined; whereas that of inhalations by means of atomized fluids is a novel one, and one which will require much unbiassed investigation to determine its true position."

ART. XXVIII.—*Education of the Imbecile.*

Fourteenth Annual Report of the Pennsylvania Training School for Feeble-Minded Children for 1866. 8vo. pp. 30. Philadelphia, 1867.

Fifteenth Annual Report of the New York Asylum for Idiots. Transmitted to the Legislature March 9, 1866. 8vo. pp. 70. Albany, 1866.

AMONG the various benevolent institutions which have been organized during the present century, there are none which present stronger claims to our approval than those which have for their object the education of feeble-minded children, and the amelioration of their condition generally.

The considerable percentage of this unfortunate class who, through the training to which they have been subjected in the institutions referred to, have been so far strengthened in mental power as to be able to assume a respectable position in society, and support themselves by their own industry, is of itself sufficient to press upon our attention the asylums and schools for the imbecile. As schools, none others are so well adapted to help the sluggish and clouded reason to the rudiments of English education, to correct perverted morals and disordered fancies, and train the feeble-minded to habits of virtue and usefulness. Even in those cases in which any useful amount of education is found to be impracticable, as asylums for these irreclaimable idiots, the institutions under consideration are valuable in several points of view. By relieving the mother of the care of her helpless, idiotic child, the energies of her mind and body can be the more

fully directed to the proper training and education of her other children, while, at the same time, from the community is removed the presence of individuals who, if not actually dangerous, have often a pernicious influence.

"A very obvious and important reason for the removal of the lower class of idiots or imbeciles from their homes"—we use the language of the Pennsylvania report—"grows out of that principle of imitativeness, by which the similarity of the children of the same family increases the liability to a dangerous imitation or absorption of the frail one, until deterioration is marked upon the natures of all."

The pupils of the Pennsylvania institution are classified according to their dependence, or the degree to which they may arrive in self-support. Adventitious disease or accident may disappoint the hope formed in some cases, while individuals classed as hopelessly dependent, will occasionally arouse from their lethargy, and gain a foothold in a higher grade.

In two classes all the pupils are embraced, 1st. The hopelessly and totally dependent, earning nothing, many of them incapable of attention to their personal wants. 2d. Such as, under advantageous circumstances, may be advanced from varying degrees of dependence to partial, or in some few cases, to entire self support. The second class is divisible into three grades. *a.* Children possessing peculiarities of mind, or deficiency of intellect, disqualifying them for ordinary schools. Simpletons, as they are often called. *b.* Children possessing peculiarities of mind, or deficiency of intellect, accompanied with super-excitement of nervous system and enfeebled *morale*. *c.* Children possessing peculiarities of intellect, complicated with remediable epilepsy.

It has been considered that for the epileptic-imbecile there is no relief. This later experience has shown to be not true. Seguin cites a case of a profound idiocy, complicated with epilepsy, in which the motor disorders and nervous irritability were so regulated by sharp training, that in the sixth month the daily attacks of epilepsy entirely ceased, and the patient from *idiot* became *imbecile*. Several cases of corresponding improvement occurred in the Pennsylvania institution. In the report from the latter it is remarked that there is no positive objection to the admission of epileptics into the institution, on the ground of danger of their contact with the children free from the disease. Only one case of "simulated epilepsy" was met with, and the artifice was so flimsy that it was readily detected, and a proper course of discipline at once corrected the imitator.

In the report from the Pennsylvania institution is the description of a class of children, including many who, when placed under firm control, and a kind, but judicious and steady discipline, are capable of a reform sufficiently complete to render them useful, and even exemplary, members of the community. In the children referred to there is a condition of the nervous system which, if not early recognized by parents, and skilfully treated by a wise domestic discipline, will reduce the possessor to imbecility, or render him a moral scourge in the community. Indeed, there are reasons for believing that some cases now remanded to refuges and prisons as criminals, are fitter subjects for the asylums and training-schools instituted for the feeble-minded, being the victims of a low brain organization, and deranged by inheritance. D. F. C.

ART. XXIX.—*The Principles of Biology.* By HERBERT SPENCER, author of "The Principles of Psychology," "First Principles," "Illustrations of Progress," and other works. Vol. I. New York: D. Appleton & Co., 1866.

THE author of this work, in our estimation, is one of the most erudite, philosophical, and profound thinkers and writers of the day. In the publication before us he is cultivating a field quite different from those which have rendered him eminent. The manner in which the subject is discussed is particularly attractive to our profession, evincing as it does a thorough knowledge of the general principles of the vital organization and functional operations of both

animal and vegetable life. The aim of the work, of which the present is the first volume, to be followed by another, is to set forth the general truths of biology, as illustrative of and as interpreted by the laws of evolution; the special facts being introduced only so far as is needful for the elucidation of the general truths. In the preface to the American edition, he renders thanks to Prof. Huxley and Dr. Hooker for the supply of information where his own was deficient, though it is very manifest that the general principles and theories enunciated by him are the fruits of his own profound reflections and study.

In Part First, relating to the *Data of Biology*, which embraces an account of the elementary matters of which living structures are composed, and the action and reaction of forces, also of the correspondence between life and its circumstances, and the *Scope of Biology*, the student of nature will find a most elaborate and interesting exposition of the principles governing those most mysterious of the products of creation, *life* and *growth*.

The chapter on the "Proximate Definition of Life" is a most ingenious attempt to answer that most abstruse question, What is life? with acute and philosophical criticisms upon the efforts of other authors to define its meaning.

In treating of the "Scope of Biology," the extent and nature of the subject-matter is divided thus:—

1. An account of structural phenomena presented by organisms. And this subdivides into—
   a. The structural phenomena presented by individual organisms.
   b. The structural phenomena presented by successions of organisms.
2. An account of the functional phenomena which organisms present. And this, too, admits of subdivisions into—
   a. The functional phenomena of individual organisms.
   b. The functional phenomena of succession of organisms.
3. An account of the actions of structure on function, and the reactions of function on structure. And, like the others, this is divisible into—
   a. The actions and reactions as exhibited in individual organisms.
   b. The actions and reactions as exhibited in successions of organisms.
4. An account of the phenomena attending the production of succession of organisms; in other words, the phenomena of genesis.

In the chapter on "Growth," we have, in the first place, a lucid statement, illustrated by many details, of the wide difference between the various departments of the animal and vegetable kingdoms. Thus, "On looking at the organic kingdoms as a whole, we see that the limits between which growth ranges are very wide apart. At the one extreme we have monads so minute as to be rendered but imperfectly visible by microscopes of the highest power, and at the other extreme we have trees 300 feet high, and animals of 100 feet long. It is true that though in one sense this contrast may be legitimately drawn, yet in another sense it may not; since these largest organisms are made by the combination of units that are individually like the smallest."

After an elaborate discussion of the philosophy of these wide variations, comes the very interesting question, "But why should the growth of every organism be finally arrested? Though the rate of increase may, in each case, be necessarily restricted within a narrow range of variations—though the increment that is possible in a given time cannot exceed a certain amount; yet why should the increments decrease, and finally become insensible? Why should not all organisms, when supplied with sufficient material, continue to grow as long as they live? To find an answer to this question we must first revert to the nature and functions of organic matter."

The several conditions by which the phenomena of growth are governed are lucidly stated and discussed, as are also the numerous other inductions of this most wonderful of all the phenomena of nature.

The subject of "Development," which is often used as synonymous with growth, is herein regarded as *increase of structure*, and not *increase of bulk;* and "Evolution," comprehending growth as well as development, is treated upon occasions when both are implied. In this chapter may be found much that is useful to the profound physiologist, as well as to the general scholar.

The branches of the general subject under the heads of Function, Waste and

Repair, Adaptation, Individuality, Genesis, Heredity, and Variation, occupy several chapters consecutively, and are treated with originality and ability.

There is a species of fascination in the writings of Mr. Spencer, which compensates for the very close attention which is required by the depth of his researches.

We have no hesitation in commending the work to the consideration of even weak-minded superficial thinkers; the idea of its having a tendency to atheism, as has been charged upon it, being purely the fancy of some one unable to "look through nature up to nature's God." J. H. G.

ART. XXX.—*Atlas of Surgical and Topographical Anatomy.*—By B. J. BÉRAUD, Surgeon and Professor to the Maternity Hospital of Paris, &c. &c. Illustrated by one hundred plates, drawn from nature by M. BION. Translated by ROBERT THOMAS HULME, M. R. C. S., London. H. Baillière. Royal 8vo. 1866, parts 4, 5, 6 and 7. New York: Baillière Bros.

THESE numbers of Prof. Béraud's beautiful work contain two representations of the submaxillary region, showing the superficial and deep layers; two of the subhyoid region; two of the sterno-mastoid region; three of the region of the neck; one of the supra-clavicular region; a horizontal section of the neck on a level with the fourth cervical vertebra; two views of the dorsal region; one of the costal region; one of the mammary region; one of the region of the sternum; two of the mediastinum (anterior, and posterior); five of the thoracic region, with a transverse section of the chest on a level with the eighth vertebra; four of the lumbo-sacral region; four of the antero-lateral region of the abdomen; six of the cavity of the abdomen; one of the region of the internal iliac fossa; three of the inguino-crural region; eight of the perineal region in the male; two of the anal region; two of the scrotal region; two of the region of the pubis and of the penis, and also an antero-posterior section of the pelvis, including the urethra; section of the male pelvic region, and four views of the ano-perineal region in the female.

Much useful information in relation to pathology and operative surgery of all these regions is pointed out in connection with the explanations of the figures.

We must again strongly recommend this work to the attention of the Profession, not only on account of its beautiful execution, but for the very useful information it furnishes.

ART. XXXI.—*Das Vorkommen der Blattern in dem* Herzogthum Nassau *in den Jahren* 1818 *bis* 1862. *Nach den Akten bearbeitet von* Dr. ARNOLD VON FRANQUE. Privatdocent an der Universität München. Separat Abdruck aus den medicinischen Jahrbüchern für das Herzogthum Nassau, 22 Heft. 8vo. pp. 345. Wiesbaden, 1866.

The History of the Occurrences of Smallpox in the Duchy of Nassau during the years 1818 *until* 1862. *Prepared from Actual Observations by* ARNOLD VON FRANQUE, *Private Tutor in the University of München.* Printed from the Medical Annual of the Duchy of Nassau.

THE account given by the author of the work before us of the occurrences of smallpox in the several departments of the Duchy of Nassau, from 1818 to 1862, is replete with interest and highly instructive. It presents, it is true, no new views in respect to the pathology or treatment of the disease. Its chief interest consists in the positive testimony it furnishes of the entire efficiency of the vaccine infection, when the system is put completely under its influence, as a protection against an attack of smallpox, in nearly every case. That even in

those where it fails to afford entire protection, it disarms the subsequent variolous attack, should one occur, of its severity, shortens its duration, and secures the patient's life, in nearly every instance, from all danger. We find that in many locations, upon the appearance of smallpox, a general vaccination was promptly resorted to in the case of the unprotected, and the further extension of the disease was arrested. In numerous instances, even after the unprotected had been fully exposed to the variolous poison, vaccination either prevented the occurrence in them of an attack of smallpox, or so modified the character of the attack as to deprive it of all malignancy and danger.

By the observations detailed in the work before us is fully sustained the importance of a general plan of revaccination being adopted in locations where the variola makes its appearance. This determines the efficacy of the previous vaccination, and furnishes a test, in those cases in which from idiosyncrasy of constitution there is an insusceptibility to the action of the vaccine virus, or in which its prophylactic powers diminish or become lost with the lapse of time. And in this manner rendering cases of varioloid less liable to occur during the prevalence of smallpox as an endemic or epidemic.

Facts are also deduced to show the deterioration which vaccine virus undergoes after it has passed through, successively, the bodies of a large number of human beings, and the propriety of resorting to the cow, at short intervals, for a supply of that which is fresh and more active. D. F. C.

ART. XXXII.—*The Renewal of Life. Lectures, chiefly Clinical.* By THOMAS KING CHAMBERS, M. P., Honorary Physician to the H. S. M. the Prince of Wales, and Lecturer on the Practice of Medicine at St. Mary's Hospital, &c. &c. Second American from the fourth London edition. 8vo. pp. 646. Philadelphia: Lindsay & Blakiston, 1866.

ON the first appearance of this work, it was fully reviewed in this Journal, (No. for April, 1863), and it was again noticed on the publication of the third edition (No. for July, 1865). In the present edition the author has thoroughly revised the previous one, without, however, making any additions except the very useful one of an index. We cordially recommend Dr. Chambers' lectures to the attention of the profession, being persuaded that they are calculated to awaken inquiry in the right direction, and to afford useful instruction.

ART. XXXIII.—*Erkennung und Behandlung der Prostata-Krankheiten.* Von HENRY THOMPSON, Arzt am Londoner Universitäts-Hospitale, etc. Autorisirte Deutsche Ausgabe. 8vo. pp. 255. Erlangen, 1867.

On the Nature and Treatment of the Diseases of the Prostate. By HENRY THOMPSON, Physician to the London University Hospital, etc. Authorized German edition.

THE excellence of Mr. Thompson's monograph on the pathology and treatment of the several morbid conditions of the prostate gland, induced Dr. Theile, of Weimar, to undertake its translation into German, in order that the practitioners of his native land should have ready access to the highly practical teachings of the author. The translation of Dr. Theile presents a very accurate rendering of the text of the original, without note or commentary. The only changes which occur have been sanctioned by the author. They consist, principally, in the arrangement into ten sections of the several subjects included under the head of "Pathology of the Diseased Conditions of the Prostate," which, in the original, have devoted to them seventeen separate chapters. The

number of the illustrations in the original have been reduced also, by leaving out such of them as, in the estimation of Dr. Theile, throw but little light upon the author's meaning. D. F. C.

ART. XXXIV.—*An Index of Diseases and their Treatment.* By THOMAS HAWKES TANNER, M. D., F. L. S., etc. 8vo. pp. 397. Philadelphia: Lindsay & Blakiston, 1867.

THIS index, we are told, was not prepared for the use of the student to instruct him in the nature of "the tools with which he will have to work, and the best mode of employing them." For these the student must seek in other treatises. The work has been prepared solely for the instruction of the practising physician, who, having employed his customary weapons against disease, finds himself baffled.

The physician is to be pitied, but still more the patients of that physician who is so deficient in medical knowledge as to be forced, in his hour of need, to resort for information on any subject connected with the theory or the practice of medicine to a work like the one before us; a work from which, because of the mere outline character of its teachings it is admitted the student would not be able to learn how to distinguish and to manage therapeutically the ailments with which he would be called upon to deal every day at the termination of his novitiate.

All the positive information this "Index of Diseases" is adapted to convey, either to student or practitioner, could be as fully acquired by consulting a proper medical dictionary, such as that, for instance, of Dunglison. D. F. C.

ART. XXXV.—*Extracts from the Records of the Boston Society for Medical Improvement, with Papers read before the Society.* Published in the Boston Medical and Surgical Journal. By the Secretaries of the Society, FRANCIS MINOT, M. D., and CHARLES HOMANS, M. D. Vol. V. 8vo. pp. 559. Boston, 1867.

THE volume before us shows very clearly that the Society from whose records it is made up is, in strict parlance, a working one. The members are manifestly earnest in their desire to contribute to the general fund of medical knowledge whatever facts their respective fields of observation may present, calculated to throw light upon the etiology, pathology, or treatment of disease, or the true character and management of surgical maladies and accidents.

The collection of facts embraced in the volume under notice presents much to interest and instruct. Though, in many instances, their record as isolated observations, collected within a limited and special field, may render them of little value so far as they are calculated to add directly to our medical knowledge, or to increase our professional skill; yet, when they are taken in connection, and carefully collated with other facts from other sources having reference to the same subject, they become of very great value by aiding to establish or refute the views that have been adopted in reference to the nature, course, causation, and management of particular diseases or classes of disease.

Several of the papers included in the "Supplement" to the Extracts are especially interesting, treating, as they do, somewhat in extenso, important points in pathology and practice.

An analysis of the volume would occupy too much space, in consequence of the large number and variety of its contents, and the conciseness with which, in the majority of cases, they are treated. It is to be recollected, also, that they have all appeared in the pages of one of our esteemed contemporaries, to which access can readily be obtained. D. F. C.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Formation of Cells in Animal Bodies.*—The following is the substance of a communication from E. Montgomery to the Royal Society:—

"The so-called organic 'cells,' chiefly those of various cancerous tumours, were seen on the addition of water to expand to several times their original size, and at last to vanish altogether into the surrounding medium.

"The 'nucleus' did not always participate in this change, but at times remained unaltered, whilst the outer constituents of the 'cell' were undergoing this process of expansion.

"This curious phenomenon of extreme dilation is intelligible only on the supposition that the spherical bodies in question are in reality globules of a uniformly viscid material, which by imbibition swells out till at last its viscosity is overcome by the increasing liquefaction.

"In embryonic tissues, and in various tumours, single 'nuclei' were seen, each surrounded by a shred of granular matter. On the addition of water there would budge from one of the margins of the granular mass a segment of a clear globule, which continued growing until it had become a full sphere, which ultimately detached itself, and was carried away by the currents. At other times no such separate globule would be emitted but the entire granular shred would itself gradually assume the spherical shape, ultimately encompassing the 'nucleus,' and constituting with the same the most perfect typical 'cell.'

"Not only single 'nuclei' were found surrounded by a shred, but also clusters of two, four, and more were seen similarly inclosed by a proportionately large granular mass. Under these circumstances it sometimes occurred that, on the addition of water, the whole granular mass of such a cluster became transformed into a large sphere containing two, four, or more nuclei. The resulting body was to all appearance identical with shapes well known under the name of 'mother-cells.' In all these cases the granular shred must have partly consisted of a viscid material, which on imbibition naturally assumed the spherical shape.

"The author then proceeds to his experimental verification. In all the observations cited by the author, the existence of a viscid imbibing material was proved with almost conclusive evidence—a viscid material which is capable of forming globules of a definite size, and while in the living organism actually forms such globules, shapes, the nature of which has hitherto been mistaken. After a long search the substance known under the name of myeline was found to be the desired material. When to myeline, in its dry amorphous state, water is added, slender tubes are seen to shoot forth from all the free margins. These are sometimes wonderfully like nerve tubes in appearance. They are most flexible and plastic. From this curious tendency of shooting forth in a rectilinear direction, it was inferred that a crystallizing force must be at work.

To counteract this tendency, and to oblige the substance to 'crystallize'(!) into globules, it was intimately mixed with white of egg. The result was most perfect. Instead of tubes, splendid clear globules, layer after layer, were formed, resembling closely those of the crystalline lens formed under similar conditions.

"Here was actually found a viscid substance which, on imbibition, formed globules of a definite size. The remaining task was comparatively an easy one. By mixing the myeline with blood-serum, globules were obtained showing the most lively molecular motion. Thus, says the author, 'cells' being merely the physical result of chemical changes, they can no longer afford a last retreat to those specific forces called vital. Physiology must aim at being something more than the study of the functions of a variety of ultimate organic units. And pathology will gain new hopes in considering that it is not really condemned to be the interpreter of the many abnormities to which the mysterious life of myriads of microscopical individuals seem to be liable."—*Med. Press and Circular*, Feb. 13, 1867.

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2. *Development of Connective Tissue.*—Dr. ORDONEZ has thus abridged the results of a prolonged study of this subject:—

1. The stellate corpuscles, called equally plasma-cells and connective-tissue-corpuscles, are not permanent elements properly belonging to fibrillary tissue—connective—but really transitory elements proper to elastic tissue, and in which the existence of a cavity can by no means be demonstrated.

2. The primitive fibrils of fibrillary tissue, called connective, do not possess a central canal, of which there is no means of demonstration.

3. Nor are the elastic fibres channelled.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1867, from *Robin's Journ. de l'Anatomie*, No. 5, 1866.

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3. *Lymphatics of the Glans Penis.*—Dr. BELAJEFF investigates this subject as one of particular interest to syphilologists. He says, "The lymphatics of the penis, in man, present a true network of separate closed tubes, the walls of which have an epithelial lining. The chief of these capillary networks extends beneath the *mucous body of Malpighi*, where it forms a layer of numerous ramifications and anastomoses. More deeply, the lymphatic branches become larger and rarer; vertical sections show their very large gaping openings, with an adherent internal epithelial wall; nearer the surface the tubes are, as I have said, thinner, smaller, and forming sometimes meshes in the furrows of the skin, at other times little closed prolongations amongst the papillæ.

The diameter of the largest lymphatics is 1 to 2 mm.; that of the smallest, 0.08 mm. Although this variation of size is considerable, it is yet always less than that of the bloodvessels. As a proper characteristic of the lymphatics, I would mention their dilatations to be observed, either about the middle of the channels or towards their confluence; this dilatation is larger in man than in the rabbit. It may be circular or total, or it may be unilateral. In these lymphatic capillaries it does not indicate the presence of valves, as in the lymphatic trunks; it only bears reference to a simple dilatation.

The single epithelial layer of the capillary tubes consists of oval. polygonal, fusiform, or indented cells. The longitudinal axis of the cells corresponds to that of the vessels. The nearer a capillary tube is to a trunk, the more are its cells compacted and their form is elongated. The terminal meshes, on the contrary, have tolerably large and rounded cells. The flattening of the walls of a transparent tube gives to the cells, under the microscope, a multiform appearance; for the dark lines of the borders of the cells cross reciprocally, and those which belong to one of the walls modify the normal appearance of the cells of the wall beneath it. The average length of the cells is 0.6 to 0.4 mm., and their width is from 0.008 to 0.020 mm. There is greater abundance of lymphatic capillaries throughout the glands and the balano-preputial furrow than in the penis and the prepuce; but the terminal tubes of the prepuce are larger than those of the glans. The epidermis-layer has no lymphatics; they are beneath the mucous body of Malpighi, whilst below them the network of blood-capillaries is very abundant, even to the summit of the papilla.

The lymphatic trunks of the penis have two important characters, without

reckoning their considerable size, viz., the frequency of varicosities which correspond to their valves, and the composition of their walls, which are formed of two or three layers. Above the internal epithelial layer, cells, and annular fibres, accompanied by few cells said to be of the connective tissue, present themselves. The elastic, and, perhaps, muscular fibres, are in the elongated spaces which exist between the rows of transverse or annular cells. Their direction is sometimes rectilinear, sometimes zigzag.—*Ibid.*

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4. *Healthy Temperature of the Body, and the Effect of Drugs upon it.*—Dr. J. S. Warter gives (*Med. T. and Gazette*, Oct. 20, 1866) the results of some experiments made upon himself to determine the healthy temperature of the body and its normal fluctuations; and also the action of dilute hydrocyanic acid, tincture of belladonna, camphor, ether and ammonia, brandy and port-wine, on animal heat. The results of his investigations, which can be received only as *probable* truths, being deduced from experiments on a single individual, show "that the normal daily variation in temperature is usually less than two degrees, and that the pulse seems to be more variable than it in proportion, and does not rise or fall necessarily with it.

"That in health there is a gradual elevation in temperature from the time of rising till about 11 or 12 o'clock in the morning, and that the temperature then seems to have a tendency to fall more or less continuously, though each successive meal, after a certain period, seems to raise it again for a given time.

"That violent exercise is a powerful agent in raising for a time the heat of the body, and that hot tea seems to have a decided influence in raising temperature.

"That vascular sedatives reduce the frequency of the pulse long before they influence the temperature, but that it is probable that after a time the temperature also is slightly depressed.

"That alcohol, at any rate, does not cause a depression of temperature, but tends rather to elevate it slightly, and that camphor has probably a decided influence in keeping up the temperature of the body."

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5. *Existence of a Perivascular Canal System in the Central Organs of the Nervous System and its Relations to the Lymphatic System.*—His observes (Siebold und Kölliker's *Zeitschrift*, f. *Wiss. Zool*, xv. 1865) that on examining fine sections of the spinal cord from chromic-acid preparations, &c., it will be constantly found to present fissures which every one must have seen, and which have always been referred to breaking down of the tissue during section. But on attentive examination the fissures will be found to present smooth edges, and to be bordered by a layer of condensed tissue. Their course and division are regular, and the same for all sections made from the same cord. In the white substance they pursue for the most part a radial direction from the gray substance outwards, whilst others commencing at the periphery pass inwards; these are connected by smaller transverse fissures. In the gray substance they are less regularly arranged, are shorter and more angular and closer together, especially at the cervix cornu posterior. They recall the lymph fissures of the testicles and of the intestines. On dipping an injection-needle into a fresh calf's cord, and throwing in some injection, he was immediately successful in filling a canal system, whose arrangement on section exactly corresponded with that of the above-mentioned fissures. The gray substance appeared like a sponge, penetrated by a close network of tubes $\frac{1}{100}'''$ to $\frac{4}{100}'''$ diam., and the same appearances were shown in the human cord. The radial direction was very well shown. The calibre of the chief branches diminishes quickly in passing outwards from the gray substance, but opens into a close and narrow network of canals. The whole closely resembles the root network of the lymphatic system; but we will first consider its relation to the bloodvessels.

Close examination shows that every fissure is traversed by one bloodvessel, sometimes lying close to the wall, sometimes free on both sides, and so on transverse section, each vessel is surrounded by a clear space.[1] Frommann, who has

[1] See also John Dean, Smithsonian "Contrib. to Knowledge," 1864, pl. v., vi., and viii.

seen them, attributes these perivascular spaces to retraction of the tissues. The best mode of displaying them is to inject the bloodvessels in the usual way, and then to inject the spaces by sticking the needle in at random into the texture. The arrangement is also well shown by injecting a nitrate of silver solution either into the vessels or perivascular spaces. All modes of preparation show that the perivascular spaces are constant, and not produced by extravasation nor by collapse of the bloodvessels. The calibre of the spaces is two, three, or even four times greater than that of the contained vessel, and there is no bond of connection between the walls of the vessel and those of the circumscribing space.

Appearances similar to those described above are also to be seen in the brain. The spaces are proportionately larger round the larger vessels than around the smaller. His inquires, What relation does this canal system bear to the lymphatics?

Those accustomed to injections will readily perceive a similarity existing between the perivascular spaces and the lymphatics, and in their size and mode of branching, as well as in the absence of an investing membrane or wall separable from the adjoining tissues, and in the difficulty of exhibiting an epithelial lining. Fohmann and Arnold showed indisputably the presence of lymph-vessels in the pia mater, but no one has succeeded in tracing lymphatics into the substance of the brain. Are the perivascular spaces, then, continuous with the lymphatics of the pia mater?

In answer to this question His shows that the lymphatics of the pia mater can be injected *from* the perivascular spaces of the brain, and the union is effected by a wide lacunar system separating the brain from the pia mater. He believes there is no question that the perivascular spaces are the lymphatics of these parts of the nervous system. He thinks that, on the one hand, these perivascular spaces act as reservoirs for the nutritious fluids, and, on the other, serve as organs protecting these important parts from pressure, serving the same purpose for each individual segment of the nervous system that the liquor cerebro-spinalis does for the whole collectively.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1867.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Therapeutic Effects of the Bromide of Potassium.*—Dr. JAMES BEGBIE, in an interesting article (*Edinburgh Med. Journ.*, Dec. 1866), states that after some years' use of the bromide of potassium he has become satisfied of its great value in the treatment of many diseases, but more especially in disorders of the nervous system, affections of centric origin, or of remote parts through reflex action.

1. He asserts, and this assertion can be confirmed by all who have employed the bromide of potassium, that it is a valuable sedative and hypnotic, and it will often tranquillize when narcotics fail. A dose of from 20 to 30 grains dissolved in wineglassful of water, or of orange-flower water, given at bedtime, repeated in the morning, and persistently employed for days or weeks, will often produce tranquillity in the sleeplessness during convalescence, and after surgical operations.

"2. In those distressing nervous affections, the offspring of overtaxed brain, which we are ever and anon called upon to combat in the case of the earnest student, the plodding man of business, or the speculating merchant, cases where, by rising early, and sitting up late, neglecting regular hours of diet, and abandoning exercise in the open air, the whole machinery of life and health have been deranged, and the unhappy victims contemplate nothing short of the wreck of mind and body: in these circumstances, next to rigid hygienic rules imposed by the physician, and carefully carried out by the patient, will be found the amelioration and ultimate removal of the evil, in the use of remedies which have

a calmative effect upon the nervous system. Of these the bromides, in my experience, are the safest and the best. * * * Associated with the cerebral disorder of giddiness and sleeplessness, we often find perversion of the external senses, such as rushing, ringing sounds in the ears, etc. These I have found to be quelled and silenced by the use of the bromide, which may be successfully administered in all cases of hyperæsthesia."

3. In that distressing nervous disorder brought on by masturbation he has repeatedly satisfied himself that the remedy in question is a trustworthy agent.

4. In various shades of epileptiform disorder, and even epilepsy itself, resulting from the nervous condition brought on by the practice just alluded to, Dr. B. states that the bromides exercise a powerful influence. Dr. B. has never seen any evil result from its long continuance; the system acquires a tolerance of its employment.

5. In acute mania and delirium tremens he considers that for procuring calmative and sedative effects, the bromide will be found safer than opium, antimony, aconite, and digitalis. "I have seen," he states, "in two recent cases of violent maniacal excitement, a dose of thirty grains of the bromide of potassium, administered every second hour, reduce to quietness the restless subjects, and lay them down in sleep, of which they had for days been deprived. I have not much experience of the remedy in delirium tremens, but I know that it is now on this trial, and I entertain little doubt that it will be successful. In one case its use has been followed by satisfactory results, quickly calming the agitation and excitement, and inducing sleep. In nymphomania, the bromides have been employed with marked success, and Dr. James Struthers informs me that he has obtained most satisfactory results from their administration in puerperal mania. This experience is confirmed by that of other physicians engaged in obstetric practice. In melancholia, attended with fixed delusions and great restlessness, I have found the bromide a powerful calmative."

6. In several affections of the larynx and bronchi, which there is reason to believe have a cerebral origin, or, at least, an intimate connection with the nervous centres, as hooping-cough, laryngismus stridulus, spasmodic croup, and spasmodic asthma, he has found the bromides to possess anæsthetic powers not inferior to any of the narcotics. In spasmodic asthma, Dr. B. has obtained the most satisfactory results from the employment of the bromides. "In two cases of long standing, which had resisted all approved methods of treatment, and where the patients had renounced all hope of benefit from drugs, the use of the bromide of potassium in full doses, night and morning, was followed by a remarkable remission of the fit—the patient in one case having slept for several consecutive nights without the return of the asthmatic paroxysm, a circumstance which had not occurred for years. In the second case the result was equally satisfactory."

7. Dr. B. has found the bromide useful in certain cases of vomiting, and in other affections in which the ganglionic nervous system is disturbed.

8. Considering the nervous element present in diabetes, and the sedative effects on the nerves of the bromide of potassium, Dr. B. was induced to hope for beneficial effects from this salt in that disease, and he briefly relates four cases in which it had been employed. "These cases," he remarks, "sufficiently show that there are forms of diabetes in which the functional derangement of the liver, and the production of sugar, are arrested by an agent whose operation is that of a sedative to the nervous system. It would be premature at the present moment to speculate on the amount of success that may attend the exhibition of the remedy in the varying circumstances in which the disease presents itself."

"9. The phenomena of cholera, in its earlier stages," Dr. B. remarks, "point to its intimate connection with disorder of the ganglionic system of nerves, with irritation of the nerve-centres and vaso-motor nerves, and with spasm of the capillary vessels, and obstructed circulation. To arrest this condition as early as possible seemed a clear indication of treatment; and the bromide of potassium, as possessing decided power in allaying irritation of the nervous system, and of relaxing spasm of the muscular fibre, was proposed by me as a possible means of allaying at least some of the more urgent symptoms of the

disease. It was introduced into practice upon no empirical ground, and with no expectation that it was to be found a cure for the disease. The very first trials of it in the Leith Cholera Hospital were such as to justify the confident hope that it would be found useful; and its subsequent employment there, as well as in the Edinburgh Cholera Hospital, has not disappointed expectation. In the two institutions named, the former under the superintendence of Mr. Niven, the latter under that of Dr. Stevenson Smith, and also in private practice, I have had many opportunities of witnessing its effects, and am now prepared to say that the bromide of potassium, though not possessing the properties of an antidote to the poison of cholera, though not a specific to the shock of this terrible disease, has certainly stript it of some of its terrors."

10. In the treatment of the nervous element in fever we have, Dr. B. says, in the bromide of potassium, an excellent substitute for opium, and antimony, henbane, camphor, and other sedatives. "A sufferer from quotidian ague, after large and repeated doses of quina during the interval, had his regular accession of cold, and hot, and sweating stages unaffected by the specific. The sweating stage was usually protracted and exhausting, and at the end of a fortnight no mitigation was effected. He was advised to take a full dose of the bromide of potassium every three hours during the remission, and, with one imperfect paroxysm, he got quit of his malady."

11. In obstinate cases of neuralgia, which have resisted the usual remedies, "when no palpable or suspected organic mischief gives rise to the want of success in the use of well-tried and approved remedies, and when no constitutional diathesis stands in the way of well-directed skill to overcome; in those anomalous forms of neuralgia let me ask a trial of the bromide of potassium. It will, now and then, in its own gentle way, reprove the employment of the more heroic treatment which had anticipated its use, and demonstrate that a calmative, in such cases, frequently succeeds better than a counter-irritant."

12. Lastly, Dr. B. has tried the bromide in two cases of "exophthalmic goitre" with the effect of calming the system, though without curing the disease.

Dr. B. has used a gargle composed of one ounce of the bromide of potassium in a pint of water in irritable sore throat with marked advantage.

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7. *Antiseptic Properties of the Hyposulphites.*—Dr. CONSTANTIN PAUL, who has previously written upon the physiological and therapeutical properties of the sulphites and hyposulphites, contributes to the *Bulletin de Thérapeutique* two facts relative to the disinfectant properties of the hyposulphites.

First fact:—A patient suffering from severe dysentery arrived in Paris in October, 1865, during the prevalence of cholera. He inhabited a healthy locality, in which there had been no cholera. Some days after his arrival, the chambermaid took cholera and died in twelve days; after her several other servants were seized with cholera, but none died. Believing that this outbreak was due to the extremely offensive evacuations of his dysenteric patient, Dr. Paul employed a solution of hyposulphite of soda as a disinfectant. To the great comfort of those in attendance, the fetid odour from that moment disappeared. Not content with this amelioration, however, Dr. Paul sought to disinfect the offending matter before it left the intestine, for which purpose he employed the solution in the form of enemata. The effect of this was not only to destroy the odour of the evacuations, but also to give considerable relief to the patient, the intestine becoming less painful and defecation less irksome.

Second fact:—Dr. Paul, considering that the lochiæ may be a fruitful cause of puerperal diseases, resolved to try the disinfectant action of hyposulphite of soda as a preventive of these distressing obstetric sequelæ. For this purpose, he sprinkled the napkins to be applied to the parts with solution of the hyposulphite, and found that by that means the disagreeable odour which attends the accouchement-chamber was completely dispelled; and he believes that not only a disagreeable but a dangerous condition of the atmosphere of the apartment may thus be obviated. Dr. Paul states, that far from causing irritation of the parts, the solution has rather anæsthetic properties, and moreover, that wounds previously dressed with it become much less sensitive and less painful when touched.—*Edinburgh Med. Journ.*, Jan. 1867.

8. *Physiological Action of the Principles of Hellebore.*—M. Marmé has published the results of his investigations upon the action of *helleborine* and *helleboreine*, two substances prepared from the roots of green and black hellebore, and which he looks upon as glycosides. Helleboreine in small doses acts somewhat like digitaline, and diminishes the pulse; in larger doses, on the contrary, it accelerates it and produces a brief paralysis of the heart. It increases the secretion of saliva as readily when introduced into the blood as into the mouth. It acts as an irritant to the digestive tube, producing violent vomiting and dysenteric diarrhœa accompanied with severe pain; it causes hyperæmia of the pelvic organs, especially in women. Helleborine acts on the intestines like helleboreine, but differs from it in being slightly narcotic also.—*Lancet*, Jan. 12, 1867.

9. *Absorption of Phosphorus.*—Herren, Husemann, and Marmé have concluded, from their numerous experiments, that, contrary to the general supposition, phosphorus in the uncombined condition is absorbed into the system. They state—1. That when oil of phosphorus is introduced by means of a tube into the stomach of dogs or cats, it may be detected in the liver by Mitscherlich's process in two or three hours after its ingestion. 2. Phosphorus may be demonstrated in the liver of herbivorous animals, as well as in those of carnivora. 3. The dose necessary to enable the detection of phosphorus in the liver is extremely small. By using Mitscherlich's process one may detect the phosphorescent light in the liver of rabbits to which so small a dose as a single cubic centimetre of the oil has been given. 4. Sometimes a strong odour of phosphorus is obtained by macerating the liver in sulphuric acid. 5. Phosphorus may also be detected in the heart and in its contents, especially when the oil has been administered in large doses.—*Ibid.*

10. *Administration of Cod-Liver Oil.*—Dr. Ludovic Rouland proposes the following formula for disguising the taste of cod-liver oil: Of the oil, 100 parts; alcohol, of the density .9396 (*i. e.*, rather weaker than proof spirit), 60 parts; essence of peppermint, 3 parts. These form an emulsion which may be given in tablespoonful doses thrice a-day. Dr. Rouland has succeeded in giving the oil in this form in cases in which it was previously intolerable. But in certain cases which have resisted the oil even in this form, he has employed the following substitute with advantage: almond oil, 60 parts; cacao butter, 3 parts; alcohol, of the density .9396, 30 parts; syrup of fir-tops, 40 parts; tincture of orange-peel and phosphate of lime, of each 5 parts. Hypophosphite of lime may be used instead of the phosphate.—*Edinburgh Med. Journ.*, Jan. 1867, from *Abeille Médicale.*

MEDICAL PATHOLOGY, SPECIAL THERAPEUTICS, AND PRACTICAL MEDICINE.

11. *Pathology of Cerebral Softening.*—Two Parisian hospital *internes*, MM. Prevost and Cotard, have diligently availed themselves of the opportunities afforded them during their residence at the Salpetrière, of studying the pathology of cerebral softening. In addition to noticing the appearances presented in the brains of persons dying with softening of the brain, they have, by the advice of M. Vulpian, produced artificially in animals some of the symptoms attending this morbid condition. Their researches, and the conclusions derived therefrom, were last year communicated to the Société de Biologie, and have appeared in various numbers of the *Gazette Médicale de Paris* for the present year. Their object, they state, has been to determine the true relation of obstruction of the bloodvessels to cerebral softening. No one, they say, denies in the present day, the part which obliteration of the vessels plays in the production of softening of the brain; but are all cases of softening to be attributed

to this cause? Having related and commented on a number of experiments and *post-mortem* examinations, and given a general summary of the results, MM. Prevost and Cotard remark, that they have not studied every point in the history of cerebral sofening. This was not their intention; their purpose has been to offer some new considerations, and to elucidate some still obscure points. They have taken no notice of the various kinds of inflammatory softening. The following are the principal conclusions at which they have arrived.

Experiments on animals (consisting in the injection into the vessels of lycopodium or snuff) has enabled them, by means of these artificial emboli. to produce softening identical with that which is observed in man, and to follow its progress through various stages. In this way they have been able to study the hyperæmia which is first produced, the necrobiotic[1] degeneration which follows, and, finally, the production of connective tissue and the formation of yellow patches which belong to the third period of softening. Analogous experiments have already been made by MM. Virchow, Cohn, Panum, etc.; but the procedures employed by them have produced death too rapidly to allow them to study softening in its different phases. From their experiments, MM. Prevost and Cotard have ascertained that ordinarily a distinct congestion is produced at the points where the obstructed artery is distributed. The cause of this hyperæmia it is difficult to determine at present; but, whatever may be its mechanical cause, the hyperæmia of red softening must be considered as of an entirely different nature. As early as the third day, there are present well defined granular bodies, and a large number of fatty granulations not yet agglomerated; these are collected around the capillaries, forming, as it were, a sheath to these vessels. In some instances, the walls of the capillaries have presented consecutive granular and fatty degeneration; and, in one case, dissecting aneurisms were formed. In a dog which survived the experiment fifteen days, a true yellow patch was found in the cerebral convolutions.

The study of cases at the Salpêtrière, in which cerebral softening has been found after death, has led the authors to consider the process very analogous to that which they have artificially induced in animals. The necrobiotic process has appeared to them almost always to depend on arrest of the cerebral circulation, varying in origin; and they have observed a certain relation between the various forms of disturbance and the characters of the softening. The disturbance of the circulation sometimes arose from obstruction of any artery by a thrombus or embolus; sometimes from atheromatous degeneration of the cerebral arteries; sometimes, perhaps, from more or less general capillary embolism. In two cases, no cause could be ascertained; but perhaps the arterial obstruction escaped notice. None of their observations have led them to infer with certainty that softening has been due to atheromatous degeneration of the capillaries; this degeneration may be consecutive.

Phenomena of irritation are sometimes added to the process which essentially constitutes softening. In some instances, inflammation and suppuration took place around the infarctus formed in dogs; and the authors endeavour to trace a relation between these phenomena and the production of false membranes on the dura mater at the level of old foci of softening.

In speaking of the symptoms, they point out that the attacks of vertigo and the apoplectiform paroxysms followed by rapid death without lesion of the nervous centres, which most authors have ascribed to congestion, are due to impeded cerebral circulation. They endeavour to establish a direct relation between the intensity of the attack and the extent of the interference with the supply of blood; and they show that both thrombosis and embolia may give rise to sudden death. Regarding paralysis, spasm, and other symptoms of softening, they have but little to add to what has already been said by other authors. The paralysis, they find, most frequently sets in suddenly, and rarely follows a progressive course; hence no diagnostic value can be attached to this symptom. Examination of the temperature of the rectum in some instances, and the information on this point which the authors have derived from M. Charcot, leads

[1] Necrobiotic (Fr. *nécrobiotique*), from νεκρος, dead, and βιος, life, a term denoting the death of tissues during the life of the individual.

them to conclude that the temperature of the body is not essentially raised during cerebral softening; and hence that, if inflammation have any share in the process, it must be altogether secondary. It would, they observe, be interesting to make a similar series of observations in cases of inflammatory softening.—*Brit. Med. Journ.*, Nov. 17, 1866, from *Gazette Médicale de Paris*, July 14, 1866.

12. *Apoplexy of the Medulla.*—M. Lévier, after describing a case of apoplexy in the lumbar region, comments on the cases of medullary apoplexy hitherto reported. In the medulla oblongata, there have been nine cases, four only being pure; the results were, loss of consciousness, involuntary epileptiform movements, and sudden death. Of apoplexy in the spinal cord there were seventeen cases; in two-thirds of these, the lesion was in the upper part of the medulla. The attack was rarely sudden; it was generally preceded for a week or a fortnight by pain in the spinal cord and symptoms of congestion. The first symptom is paralysis, which often occurs during sleep, and affects the sphincters; its progress is rapid, and it is not accompanied by contractions of the limbs; its extent depends on the seat of the apoplexy. Reflex excitability is destroyed. There are ordinarily greatly impeded respiration, feeble cough, difficulty in expectoration, aphonia, and impairment of speech. Paralysis of sensation generally follows that of motion; sometimes there is hyperæsthesia; the spine is not tender on pressure. Both sides, or one only, may be paralyzed; in three instances of the latter which occurred, there was paralysis of sensation on the opposite side. There is elevation of temperature in the paralyzed parts. The duration of the disease varies from a few hours to some months. The diagnosis may be difficult. In meningeal apoplexy, there are convulsions; the paralysis of motion is less complete; moreover, it is generally secondary, occurring in the course of tetanic or convulsive affections. Congestion of the medulla is distinguished by the short duration of the paralysis, the slightness of the symptoms, and the rapid return of health.—*Brit. Med. Journ.*, Dec. 22, 1866, from *Schweizerische Zeitschr.*, and *Gaz. Méd. de Paris*, June 9, 1866.

13. *Etiology of Eczema.*—Dr. Frank Smith, of Sheffield, has recently made some very important observations in reference to the etiology of eczema in its relation to some disorder of the renal function, as shown by the presence of indican in the urine. In nine out of ten cases Dr. Smith has detected indican in pathological quantities. Indican is supposed to be due to a retardation of the process of declension from the complex to the more simple of the products of function and secretion. Its own highly complex formula is a strong evidence in favour of this opinion, in addition to the ease with which it is broken up into leucine, indigo, and glucine. Dr. Smith suggests that this retardation is due to accumulation of urea and other products of waste in the blood, owing to deficient renal secretion; for he has detected urea in considerable amount in the serum of eczematous patients. Indican occurs in the urine in the reaction stage of cholera and in Bright's disease. The spectrum of the solution prepared from the urine for the detection of indican is the same as that of common indigo. These observations are exceedingly important and suggestive.—*Lancet*, Feb. 2, 1867.

14. *Herpes Circinatus from Favus in the Cat.*—Dr. Tilbury Fox exhibited to the Pathological Society of London, Nov. 13, 1866, several specimens of parasitic fungi sent to him by Dr. Purser, of Dublin—one from a favus patch on the paw of the cat, the others from herpes circinatus (tinea circinata) of the arm produced by inoculation with the fungus (achorion) from the favus of the cat. It appears two cats were affected by favus, the one already mentioned, and a second about its nose; attempts were made by one of the ladies in the house to rub off the crusts from the diseased places in these cats, and very shortly afterwards tinea circinata showed itself about her hands, arms, and shoulders; three other inmates (females) were similarly attacked. The disease was most carefully diagnosed, and not a feature of favus showed itself. Dr. Purser then inoculated his own arm, and produced what was pronounced to be

tinea circinata (herpes circinatus); he sent some of the scales to Dr. Fox, which were exhibited. There was an absence of spores, but mycelial threads were very abundant. They were smaller, less branched, and more devoid of granules than the achorion-tubes, characters which belonged to trichophyton. The cases were interesting as showing that favus may give rise to other forms of parasitic disease, a view which Dr. Fox holds against many authorities, and he remarked that De Bury's recent experiments show conclusively the difficulty of getting an interchange of characters between varieties of the same fungus.—*Med. Times and Gaz.*, Nov. 17, 1866.

[The above statements are to a considerable degree confirmatory of the researches of Prof. Salisbury, related in the present number of this Journal, pp. 379–383. It is but justice to Dr. Salisbury to say that his paper was sent to us early in November of last year, and was intended for the January No. of this Journal, but in consequence of the impossibility of having the wood-cuts done in proper season, it was laid over till the present No.—ED.]

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15. *Treatment of Diseases of the Heart.*—Dr. S. O. HABERSHON, in an interesting paper in the late volume of *Guy's Hospital Reports*, lays down *seven* principles of treatment in all cases of heart disease.

The first is, as far as possible, to *lessen its work;* and this may, to some extent, be effected by mechanical rest, by a recumbent position, and by the avoidance of sudden changes of temperature.

The *second* is to *insure regularity of action*, by avoiding mental excitement, by guarding against indigestion, and by never allowing constipation to continue.

The *third* is to *lessen distension*, especially of the right side of the heart, by purgatives, diuretics, and by mechanically diminishing the quantity of fluid in circulation.

The *fourth* is the prevention of syncope. With this view, sudden muscular movements must be avoided; stimulants may be required, as ammonia, brandy, etc.; and sedatives must be withheld or cautiously administered.

The *fifth* is to strengthen the muscular fibres of the heart, by suitable nourishment, a bracing air, if other conditions allow; chalybeate medicines, and if the patient be exhausted by want of sleep, this symptom must, if possible, be relieved.

The *sixth* is to prevent fibrillation of the blood. For this purpose carbonate of ammonia will often be useful; other alkalies, as potash, soda, and their salts may be beneficial, but, if long-continued in considerable doses, Dr. H. says, they depress the action of the heart. The acetate and iodide of potash may be advantageously combined with the carbonate of ammonia, or perhaps the hydrochlorate of ammonia.

The *seventh* is to prevent secondary complications, and to relieve them when produced. These complications are—1st, broncho-pneumonia and pleuritic effusion; 2d, pulmonary apoplexy and other hemorrhages; 3d, visceral engorgement, as hepatic and renal congestions, with ascites and anasarca. By freely acting on the bowels, the portal congestion is greatly diminished, and the liver is enabled to act in a normal manner. Thus a free mercurial purge is of great value. The kidneys may be excited to a more vigorous action by a combination of mercurial medicine with squill and with digitalis, when the latter can be borne. Salivation should be avoided. Diuretics are useful. An effectual way of diminishing the anasarca is by puncturing the skin on the thighs. The pulmonary engorgement is sometimes greatly reduced by applying cupping-glasses between the shoulders, or by the application of a blister to the chest.

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16. *Treatment of Hæmoptysis with Inhalations of Liquor Ferri Sesquichloridi.*—By Dr. P. Q. BRONDGEEST. "The local treatment of morbid affections of the air passages, by the inhalation of fluids in the state of vapour, has latterly been very extensively adopted. In no department can we, however, point to such excellent results as in the treatment of hemorrhage of the respiratory passages by means of styptic inhalations. The most important obser-

vations on this subject are undoubtedly those of Fieber,[1] both on account of the fulness of detail with which they are communicated, and of the success with which the treatment was crowned. We fully indorse what Fieber says as to the value of this method: 'If the mode of treatment by inhalation by means of pulverizers had,' he says, 'no other merit than that of rendering possible the direct application of hemostatics to the bleeding points or their immediate vicinity, this would suffice to insure it an honourable place in therapeutics. Not only is one of the most dangerous symptoms often directly removed by the inhalation of styptics, but the dictates of humanity to free the patient from an affection which renders him most uneasy, and fearfully rouses phthisical patients in particular from the consoling illusion of improvement which nature lends them to lighten their sickness, are most rapidly and effectually fulfilled.'[2]

"Fieber's observations led me to form the resolution to adopt this mode of treatment when opportunity should present itself."

Dr. B., relates three cases treated by him with inhalations of the liquor ferri sesquichloridi. For pulverizing the fluid, Bergson's well-known apparatus was employed.

These cases, he says, "prove that very obstinate bleeding from the air-passages may be arrested by the inhalation of a solution of chloride of iron. They, moreover, show that the inhalation in itself does not give rise to any temporary aggravation of the symptoms, and that if some precautionary measures be taken (to have the solution not too concentrated, and the distance of the patient from the inhaling apparatus not too short), neither is the cough excited by it. I believe that where medical assistance is called to a case of dangerous hemorrhage from the air-passages, this mode of treatment should be immediately employed, and that every physician ought to have the proper apparatus ready at hand, by means of which he can control such a dangerous symptom, and by so doing, probably save or prolong many a life.—*Med. Press and Circular*, Dec. 12, 1866, from *Nederlandsch Archief voor Genees-en Naturkunde.*

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17. *Use of Sulphite of Magnesia in Zymotic Diseases.*—H. R. De Ricci extols (*Dublin Quart. Journ. Med. Sci.*, Nov. 1866) the efficacy of the sulphites in the cure of zymotic diseases. He relates several cases in which he has employed the sulphite of magnesia with great benefit, among others the following:—

"I had under my care a gentleman over eighty, who was suffering from the most aggravated form of pompholyx diutinus I ever witnessed. The bullæ daily appeared all over his body, principally affecting the lower half, and varied in size from a millet-seed to a hen's egg. When first they cropped out their contents were clear; but in twenty-four hours became turbid, then opaque, and the raw surface, which appeared when the bullæ burst, remained long unhealed, and discharged an acrid, bad-smelling pus.

"The patient had been for some months in this state, and was gradually getting worse, when he came up from the country and placed himself under my care; every variety of treatment having been tried, both locally and constitutionally, without obtaining any beneficial result, I determined, in consultation with Dr. Hudson, on placing the patient under a sulphitic treatment, in the hopes of arresting the further increase of the disease, and thus giving nature an opportunity of eliminating the poison. As the patient was so advanced in years I preferred to commence by administering the remedy endermically, as I wanted besides to observe what effect the remedy would have on the secreting surfaces. I therefore dressed the raw spots with pledgets of lint soaked in a saturated solution of sulphite of soda in water, adding a little glycerine to the lotion; the immediate effect on the sores was most remarkable; by the second day they had completely lost their unhealthy dirty look, and had assumed a bright rosy hue, and were quickly skinning on the edges, and the pain caused by such an

[1] Wiener med. Wochenschrift, 1863, Nos. 49, 50; 1864, No. 27; 1865, Nos. 5, 6, 7, and 8.

[2] Die Inhalation medicamentöser Flüssigkeiten, etc. von Dr. Friedrich Fiebre, p. 133.

extent of raw surface was completely relieved by the application. At this time the extent of the sores was so great that scarcely a sound spot could be found from the hips to the soles of the feet. Being curious to ascertain whether the remedy was acting only locally or was also entering the system generally, I got my friend Dr. Davy to examine some of the urine of this gentleman, when he found that it gave ample evidence of the presence of *sulphurous acid*. After some weeks of treatment by external application, during which a very great improvement could be observed, both in the size of the bullæ and their daily numbers, I commenced the internal administration of the remedy in ten-grain doses every fourth hour, using this time the sulphite of magnesia; no bad result occurred—no diarrhœa, no loss of appetite, no nausea, but a still greater improvement; the bullæ now appearing only at intervals of two or three days, never larger than half an inch in diameter, and only one or two at a time; while at the commencement, when he first came under my care, the average number of bullæ which daily made their appearance was from twenty-five to thirty, their size averaging one inch and a half in diameter. The patient was now so far improved as to be able to go out to drive every day, and to enjoy life, whereas during the previous few months his existence had been a burthen to him; unfortunately, one day, he exposed himself to cold, got influenza, of which at the time there was an epidemic in Dublin, and in a few days he died —a result not to be wondered at when it is remembered that influenza at the age of eighty-two is almost always fatal. Two instructive facts are deducible from the above case: first and foremost, that sulphite of magnesia does not disturb digestion nor cause diarrhœa, both of which bad effects have been laid to the charge of this remedy; and secondly, that the sulphites, even when applied endermically, are absorbed and circulated *as sulphites*, and finally excreted by the kidneys undecomposed, *at least, in part*."

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18. *Subnitrate of Bismuth in Epidemic Dysentery of Hot Countries.*—M. BRASSAC, of the French navy, having had an opportunity of treating dysentery upon M. Monneret's plan of large doses of bismuth, speaks of the results with great satisfaction. Beginning with 15 to 20 grammes (231 to 308 grains) a day the quantity was rapidly increased to from 60 to 70 grammes (926 to 1080 grains), by the rate of ten grammes a day, proportioning the quantity to the presumed gravity of the case, and being guided by the effects of the first doses. When convalescence was established, the bismuth was gradually diminished, moderate quantities being continued for fifteen or twenty days even after the patient had been brought to one stool *per diem*. This precaution of continuing the treatment after the establishment of convalescence is strongly enforced. M. Brassac never prescribed the bismuth in small doses, which he believes to be injurious, and, moreover, he attributes the small success of his colleagues, as compared with his own, to their timidity in the use of the drug. The quantity prescribed for the day was divided into not more than five doses, given in unleavened bread, or in broth or rice-water, or mixed with other suitable articles of diet. He found that after a few doses the patients were able to take such articles of diet as before the administration of the bismuth they dared not touch. Bismuth was also in some cases applied by enemata.—*Ed. Med. Journ.*, Jan. 1867, from *Bull. Gén. de Thérap.*

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19. *Decoction of Sage in Profuse Sweating.*—M. VIGNARD, of Nantes, after the manner of Van Swieten, has successfully employed decoction of sage for the relief of profuse sweating. In the case of a man twenty-five years of age, who had suffered, from time to time, during many years from attacks of this kind, the remedy proved effectual. The sweating began suddenly between two and three o'clock in the morning all over the body, and was so profuse as to completely saturate the bed-clothes and to a considerable extent the mattress also. In consequence of the regularity of the attacks, sulphate of quinia was tried as an antiperiodic, but unavailingly; the perspiration regularly reappeared, and without any apparent pathological cause. At length M. Vignard prescribed the following preparation: Take of chopped sage leaves, a large teaspoonful (*une forte pincée*); of water, six fluidounces. Boil the sage for a

minute or two in the water; let it stand to cool, then filter and sweeten to taste. From that time the perspiration ceased whenever the decoction was taken, but reappeared when it was omitted. M. Vignard suggests the use of this remedy in the colliquative sweating of phthisis.—*Edinburgh Med. Journ.*, Jan. 1867, from *Journ. de Méd. de Nantes.*

20. *A Case of Resuscitation after Two Hours' apparent Death by Drowning, occurring in the late Catastrophe at Regent's Park.*—The following remarkable case of this is related (*Medical Press and Circular*, Jan. 30th, 1867) by JOHN DENNAN, Esq. It is to be regretted that no information is furnished in regard to the important point as to how long the man had been actually submerged before being withdrawn from the water.

"On the afternoon of Tuesday, the 15th instant, about a quarter past four, I received, in the absence of Mr. Obré, a summons to view a dead body just withdrawn from the ornamental waters in Regent's Park.

"While on the way I entered somewhat minutely into the particulars with my guide, and on my arrival determined to examine the subject very carefully.

"The man was apparently *quite dead*, and I heard the following statement, viz: that he had left his abode in perfect health, and joined in the general amusements on the ice, and was one of those at some distance from the shore when the catastrophe occurred. I particularly observed that the patient was intensely cold, from having been immersed some minutes, and having struggled in the water for more than half an hour. There was neither breathing or heart's action, the pupils dilated, the jaws clenched, and the limbs contracted, so much so that the clothes had to be cut off before anything could be done to the patient.

"A frothy mucus covered the mouth and nostrils, the body was much swollen and I had it placed on an incline at an angle of about 35°, as the body was so very cold. I commenced, with the assistance of the two men who brought him home, to try to restore warmth by degrees, rubbing the chest and limbs thoroughly and swiftly with ice and snow, cleansing the mouth and nostrils from time to time, and adopting Silvester's method of artificial respiration for more than two hours. After a quantity of frothy mucus was discharged slight signs of animation were perceptible, though so faint that I almost despaired.

"I then had him well wrapped in blankets, placing large tins of hot water at the feet, and mustard poultices on the chest, while the body was well rubbed with warm flannel under the blankets. I continued this treatment for three-quarters of an hour, at the same time continuing to imitate the movements of breathing. A decided improvement then took place. The patient's jaws relaxed, and he appeared to breathe more freely. I then administered two teaspoonfuls of warm water, which caused him to vomit slightly. As soon as he commenced breathing freely I was able to give him a little warm tea, which he apparently relished. I may here observe that I could not induce him to take spirits.

"The patient was now placed in a warm bed prepared for him, soothed to sleep, and all undue excitement prevented.

"The patient was feverish for one or two days, but on the following Friday I had the pleasure of receiving a visit from him."

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

21. *On the Diagnostic Value of the Retracted Nipple as a Symptom of Disease of the Breast.*—THOMAS BRYANT, Esq., Assistant-Surgeon, Guy's Hospital, asserts (*British Med. Journ.*, Dec. 8, 1866) confidently that the retracted nipple, as a sign of carcinoma of the mamma, has been assigned a value to which it is not entitled, and that even at the present day, its true significance is

not generally understood. "It is too true." he says, "that it is even now regarded by many men as a symptom of special value, and that, when present, it is looked upon as pathognomonic of a cancerous affection; whilst, on the other hand, we find men mistaking a cancerous tumour for a benign one simply on account of the absence of this so-called pathognomonic symptom."

Mr. B. quotes several cases which show that retracted nipple "is by no means an uncommon associate of the inflammatory and cystic diseases of the breast; and that, as a consequence, it cannot with any certainty be regarded as pathognomonic of the cancerous affections. That it does occur in connection with a cancerous tumour of the breast, is not to be disputed; but that it is a frequent accompaniment of such a disease, is open to doubt; for, on looking over my notes of 222 examples of cancer of the mamma, I find that a retracted nipple existed in only 32 cases, or in about 14.4 per cent. Should the surgeon expect, therefore, to find it in all cases of cancer, he will be disappointed; and should its absence in certain cases lead him to regard a tumour as innocent, he will, in the majority of cases, be found wrong. This symptom may be found in the infiltrating form of cancer of the breast, whether partial or complete; that is, when the disease has involved the whole gland, or only a lobe. It may also exist in some examples of the tuberous cancer, in those instances in which the tuber is developed between the ducts, and by its growth separates them—thus acting mechanically upon the nipple, and causing its retraction; the retraction, under such circumstances, taking place towards the diseased part. In the generally infiltrating form of cancer, the nipple simply retracts; and, at a later stage of the disease, it may reappear, this reappearance being due to the increase of the disease and the mechanical pressure of the nipple forwards by the tumour beneath."

Mr. B. maintains the cases he relates show "that a retracted nipple is an occasional symptom in acute and chronic inflammation of the breast; that it is found in the cystic disease of the gland, as well as in the cancerous; in fact, that it is met with *in all the diseases of the true gland, whether simple or malignant.* It is absent in the ordinary chronic mammary or adenoid tumours, simply because these tumours are not of the gland itself; and, as a consequence, the nipple, with the gland-ducts, are not interfered with. In what way, then, it may be asked, is this retraction of the nipple generally brought about? It must depend on some general or simple cause, as it is found under so many different conditions; 'for,' as I have stated in another place (*Clinical Surgery*, Part v. p. 429), 'a retracted nipple may be described as an accidental symptom in the development of a tumour; it is the product of mechanical causes, and its presence is determined by the manner in which the gland is involved in the disease, rather than the nature of the affection itself. Should any tumour, simple or malignant—should any abscess, chronic or acute—attack the centre of the mammary gland, a retracted nipple, in all probability, will be produced; for, as the disease so placed will necessarily cause material separation of the gland-ducts, their extremities—terminating in the nipple—must be drawn upon, and, as a consequence, a retracted nipple will be the result.'

"In an early stage of an infiltrating cancer of the organ, this symptom is one of *occasional* occurrence; the nipple being drawn towards the side of the gland, which may be involved. At a later stage of the disease, however, when the infiltration is more complete, the nipple may again project. In a central chronic abscess of the breast, the retracted nipple is equally common; and, in the true cystic adenoceles, it may be also present. The explanation of the cause of this symptom in all of these cases is alike, being purely mechanical, and in a measure accidental."

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22. *Periodical Inflammation of the Right Knee-Joint.*—Mr. CHAS. H. MOORE, Surgeon to Middlesex Hospital, related to the Royal Medical and Chirurgical Society (Jan. 22, 1867) two cases of this.

The first case was that of a woman aged 43, who had had ague in girlhood and was cured. Eight years afterwards, at the end of a day of fatiguing work, she was attacked with inflammation of the right knee-joint, which increased till the third day and then subsided. Thirty days afterwards a similar attack came

on, and the inflammation was repeated many times at the same interval. From the third month of pregnancy to the third month of lactation the attacks were quite interrupted. They then returned again, and when she came under Mr. Moore's care they had continued eighteen years. The only difference in the early and later characters of the ailments was that nine instead of thirty days constituted the interval; but successive attacks recurred so punctually that they could be predicted almost to an hour. This patient was not cured.

The second case was that of a girl of twenty-one, who never had ague, but who was attacked with inflammation of the right knee-joint after washing stone steps. The joint swelled, and on the third day was painful, and after that was well again. Twelve days from the attack, the whole local process was repeated in every particular without any external occasion, and again an intermission of perfect health ensued. She had altogether nearly twenty attacks, but they were not always quite punctual to the day, some occurring thirteen days and one or two eleven days from the previous one. Towards the subsidence of the disease two attacks missed, and the interval was three times as long as usual. This patient got well, apparently from the effect of quinia.

The first patient was under Mr. Moore's care only a short time, but he had the opportunity of witnessing three or four attacks. The second was under his observation during many of the attacks, and he was able to take precautions with a view to prevent their being feigned or artificially produced. In each case there was a movable body in the joint, and to it possibly the first onset of inflammation was owing; but the subsequent attacks were too precisely regular in their outbreak to be referred to any accidental cause; they were out of the date of the catamenia, and Mr. Moore expressed the opinion that they were in both patients of the nature of ague.

Mr. Moore referred to several examples of transient local disease characterized by recurrence at regular intervals. In some of these vomiting came on weekly for many years; in others, various inflammations of the throat, tonsils, eyes, &c., occurred daily at a regular hour. One case was that of a distinct quotidian ague of the arm, the rigor, heat, and stage of perspiration being marked in each fit. Most of these cases were cured by arsenic or quinia.

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23. *Diabetic Gangrene.*—M. Verneuil lately brought under the notice of the Surgical Society of Paris the subject of gangrene occurring in diabetic patients, of which he had met with six instances in the course of three months. In the first case, he was called to perform amputation in a person affected with gangrene of the foot and lower part of the leg. On inquiry, he found the patient diabetic. The man, a seller of wine, had been of somewhat intemperate habits. The gangrene was said to have originated in the pressure of the shoe on the little toe, and to have been soon followed by the appearance of other gangrenous spots on the foot and leg. The man ultimately died; M. Verneuil having abstained judiciously from any surgical interference. In the second case, that of a man aged 50, the patient had for some time had bunions, one of which became ulcerated. As the sore observed no tendency to heal, M. Verneuil examined the urine, and found sugar. The patient ultimately died worn out with profuse diarrhœa, marasmus, and low delirium. In the third case, a patient in the Lariboisière Hospital had an ulcer of the heel, of the size of a finger, with sharply defined edges, and œdema of the leg. The heart and liver appeared healthy; but the urine contained both sugar and albumen. This patient also died; but nothing in the kidneys could be found that was capable of accounting for the albumen. The fourth case was that of an ecclesiastic of high rank, about 66 years old. He had diabetes, with gangrene of the little toe, several eschars on the great toe and dorsum of the foot, and an extensive carbuncular phlegmon on the sole. In the fifth case, that of a lady, there was a carbuncle on the back. Incisions made into this producing no improvement, M. Verneuil examined the urine and found it diabetic. In the sixth case, that of a man aged 55, paralytic and subject to intermittent fever, there was a gangrenous eschar in the groin, with offensive discharge. This patient, alone of the six, so far improved under an alkaline treatment as to recover; in the other five, death occurred in a few days or weeks after the appearance of the local disease. Such cases as those

related, M. Verneuil observes, point to the advisability of examining the urine before operating in cases of gangrene of the lower limbs.—*Brit. Med. Journ.*, Jan. 19, 1867, from *L' Union Médicale*, 1st Dec., 1866.

24. *Sprains in Children.*—M. GUERSANT, in an article in the *Bulletin de Thérapeutique*, August 15th, notices the sprains produced in children by the mischievous practice of suddenly raising them by a single arm, the limb always being more or less twisted into a state of pronation or supination, with distension or stretching of the joints at the wrist and elbow taking place. It is very rare for fracture or dislocation to be produced in this way, but the appearances may be such as to cause alarm to the friends of the child and sometimes even to the medical attendants. In ordinary cases, there is no appreciable deformity present, but the movements of the parts give great suffering to the child, and on the execution of these a sound is sometimes heard, without seeming to proceed from any precise spot, such as might be produced by the sliding of articular surfaces on each other. Quite suddenly, after the execution of some of these movements, the child ceases to complain; and without our seeming to have done anything to remedy the defect, he becomes enabled to move the arm as before the accident. Sometimes, however, the pain persists, and there may be great tenderness around some one of the articulations. It is not always possible to make a correct diagnosis in these cases; but when neither fracture or dislocation can be detected, a sprain may be said to have been produced, *i. e.*, a sliding of the articular surfaces with distension of the ligaments; or, in other words, a tendency to a dislocation which has not been effected. The accident is not always confined to the wrist or elbow, and may implicate more than one joint. The arm should be kept at right angles, either in supination or pronation, according to the preference of the patient. The child then complains no more, and in three or four days is cured. If at the end of this time pain persists, a starch bandage may be applied for eight or ten days.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1867.

25. *Reducing Dislocations by means of Caoutchouc.*—M. ANGER observes that, having for some time employed this substance in the treatment of anchylosis, fractures, spontaneous dislocations, &c., the good results derived from it induced him to extend its application to traumatic dislocations. A man was brought to the clinic with dislocation of the shoulder, which the ordinary procedures failed to reduce. The trunk being secured, extension was applied by means of a tube of caoutchouc, the thickness of the little finger and sixty centimètres in length. Gently employed at first, the traction was gradually increased until the tube had been wound four times around the bed-post, thus making four traction cords of fifteen centimètres each. The extension was kept up for nearly half an hour, the patient by that time feeling quite exhausted; and the muscles which had resisted the reduction having become relaxed this was easily accomplished. This mode of making the extension by its gradual and gentle, though efficient character, M. Anger considers as very superior to any of the ordinary procedures. The amount of traction employed must be proportioned to the resistance offered, which varies by reason of strength, sex, and age. In the present case, the subject of which was athletic and the dislocation complicated, four tubes, fifteen centimètres in length, extended to double their length, amply sufficed. The extension should be regulated in ordinary cases so as to obtain complete muscular relaxation in fifteen or twenty minutes.—*Ibid.*, from *Gazette des Hôpitaux*, No. 74.

26. *Dislocation of the Sixth from the Seventh Cervical Vertebra forwards without Fracture; Immediate Paraplegia; Death on the Twenty-First Day.*—M. BERKELEY HILL, Assist. Surg. University College Hospital, communicated to the Royal Med. and Chirurg. Soc. (Jan. 22, 1867), a case of this, in which during life and even after death, until the injured parts were laid bare, no deformity of the spinal column could be detected. The paraplegia involved all the parts below the seventh vertebra. There was no irritation of the spinal cord during life. After death, which took place on the twenty-first day, the cord

was found softened and compressed by much blood, as well as flattened by the dislocated arch of the sixth vertebra forcing it against the body of the seventh. The urine was at first alkaline, and loaded with mucus and pus; but at the end of the first week it was restored to its natural condition by continuous drainage of the bladder.

The author referred to the opinions of McDonnel and others in favour of trephining the arches of the vertebræ in cases of displaced vertebræ with paraplegia, and stated the reasons which dissuaded him from attempting it in this instance. These were—the situation of the injury being so high up in the vertebral column; the inability to ascertain with exactness, during life, the amount of the injury to the spinal column; the small probability of the auxiliary muscles of respiration regaining their motor power after the cord had been released from pressure; and the possibility of so severe an operation causing immediate death by displacing the phrenic nerve, or by the shock it would involve to the exhausted patient.

Mr. Holmes thought that there were two points of interest in the case brought forward—1st. As to the rarity of such results from injury to the spine. 2d. The question of the propriety of operation. He was not certain that displacement in the cervical region was really so very rare. Several specimens showing displacement of the cervical vertebræ without fracture were in the St. George's Hospital museum, and there was one showing displacement of the last dorsal from the first lumbar, with fracture of the transverse processes. Then, as to the operation, although warmly recommended, it had not been approved in practice. Trephining the spine, or, more correctly, the laminæ of the vertebræ, had been performed by Cline, and the operation had recently been strongly urged by Brown-Séquard. Mr. Holmes was surprised that Mr. Hill had not noticed the remarkable statement of Mr. Hutchinson in the last volume of the *London Hospital Reports* on injuries to the spine. Mr. Hutchinson shows very satisfactorily that the displacement of the spinal column is very easily remedied by extension. This was so in Mr. Hill's case. If, then, the vertebræ could be put in position so easily, why operate? Then, when there is fracture, the fracture is of the body and not of the laminæ of the vertebræ, and there is no complete and permanent displacement in such cases. In cases of this kind will trephining the laminæ prevent pressure of the displaced body on the anterior part of the cord? Dr. Brown-Séquard thinks removing the laminæ would indirectly relieve the pressure the body exercises in front. On this point Mr. Holmes would give no decided opinion, except that, if such an operation could have a chance of relieving in the manner supposed, the laminæ of at least three vertebræ ought to be removed. Besides, Mr. Hutchinson showed that the pressure is not permanent, and that the paralysis results from contusion or smash of the spinal cord. If this be so, Mr. Hutchinson's facts show that the operation of trephining will be nugatory, and can do no good. Mr. Holmes did not find that in Dr. Gordon's case the operation had relieved the paralysis, and this was so in every case. The fact of survival after the operation was no evidence that the operation saved life, as a survival was common after injuries to the lower part of the spine. In the case Mr. Adams had mentioned of reduction there was no paralysis, and in the case he (Mr. Holmes) had seen, in which there had been paralysis, reduction was not followed by restoration of power to the palsied parts. He instanced a case in which Mr. Cæsar Hawkins had reduced a displacement of the last dorsal from the first lumbar without any effect on the paralysis. Mr. Hutchinson believed that reduction had no effect on the paralysis, and thus it was not necessary to add the risks of an operation to the dangers of the injury. In Mr. Hill's patient reduction was easy, and therefore in such a case it was utterly unreasonable to operate.

Mr. Callender was glad that the question of operation had been raised. It could not be considered irrelevant, as in most cases of the kind a fatal issue follows. In Dr. Gordon's case a certain amount of advantage was claimed. The patient regained power over the bladder, and he lost the painful affection of his limbs. But results quite as good follow without operation. Not long ago a patient had been treated in St. Bartholomew's Hospital by Mr. Paget and by himself (Mr. Callender), who, after an injury to the lower dorsal spine, had

difficulty with his motions and urine, and appeared sinking. Yet this patient rallied, and got into fair general health. He could not walk, but was able to enjoy life to a very considerable extent. After his discharge, being poor, he had no sufficient nursing, and then died, because he had not necessary comforts and attention. In this case the results were as good as in Dr. Gordon's case. The man would doubtless have lived if he could have had proper care, as far as the operation or no operation was in question. Dr. Gordon's case was the only one in which any credit could be claimed for the operation. Mr. Callender thought it was an experiment not yet carried out largely enough to warrant positive conclusions.

27. *Fissure of the Rectum.*—Dr. ALFRED COOPER read a paper on the disease before the Medical Society of London. He commenced with a review of the statistics of St. Mark's Hospital, which showed that the most common form of disease of the rectum, and for which the largest number of patients require operation, is fistula in ano; next in order of frequency is internal hæmorrhoids, and third on the list is fissure of the rectum. Out of the 1286 patients admitted at St. Mark's Hospital in 1866, 138 suffered from fissure; of these, 82 were without complication, 20 were coexistent with internal hæmorrhoids, 9 with external hæmorrhoids, 3 with polypus, 3 with stricture, and one, in a boy of five years of age, with procidentia. After stating that this affection was often overlooked by many surgeons, he insisted on the necessity of careful examination [he laid particular stress on digital examination in preference to that by the speculum], not only for the sake of a correct diagnosis, but also to ascertain the existence of complications. He observed that the disease was not uncommonly dependent on other morbid conditions of the bowel, and referred more especially to polypus, which he illustrated by the case of a lady who had been twice operated on for fissure; the first operation failed in consequence of a polypoid growth having remained undiscovered, but the patient recovered after the second operation, when this growth was removed. After giving a careful description of the symptoms of fissure, the author proceeded to detail the history of several patients upon whom he had operated where complications existed, and remarked that unless the polypi and hæmorrhoids were removed the operation would be a failure. He briefly alluded to the symptoms that should lead the surgeon to suspect the existence of fissure, laying particular stress on the acute and long-continued pain after defecation. He was of opinion that in the early stages of the disease, where it had not existed more than six months, it could be successfully treated without operation by regulating the bowels and applying locally an ointment composed of one scruple of calomel to an ounce of lard. That in cases of longer standing, as a rule, operative interference was necessary. That, in operating, three courses were open to the surgeon—forcible rupture, free incision, and limited incision. He discarded the forcible rupture as barbarous and offering no advantage, and preferred the free to the limited incision, as in the latter case the wound heals more slowly, and in some instances it altogether fails to effect a cure.—*Lancet*, Feb. 16, 1867.

28. *Prolapsus of the Urethra in Children.*—M. GUERSANT says that prolapse of the urethra, although scarcely if at all described in surgical works, is not a very rare affection in female children. During twenty years of practice, he has seen it in at least twelve or fifteen patients, aged from 2 to 12 years. The causes of the prolapsus have appeared to him to be, the paroxysms of hooping-cough, or the frequent cough of bronchitis, or constipation demanding violent and frequent efforts at defecation; and also general debility, as during prolonged convalescence from acute diseases, and often in the course of chronic diseases. The patients make but little complaint. Sometimes, however, the desire to pass urine is frequent, and some scalding is felt during the flow. When the labia are separated, the vulva is generally seen to be of higher colour than is normal. At the urinary meatus, there is a small rose-coloured mucous tumour; it appears to proceed from the interior of the canal, and has in its centre an opening, into which a catheter can be introduced, on doing which its nature is at once recognized. The tumour may remain stationary a long time; but some-

times it enlarges slowly, and discharges a sanguineous exudation, afterwards a purulent serosity. It increases in size, and sloughs superficially: the neighbouring parts become inflamed, and vulvitis is produced. The exudation may increase without causing much pain; but the child has heat and smarting in passing urine. M. Guersant has not seen any of these tumours which had been left to their own course for a very long time; but he believes that, at length, they would sphacelate in whole or in part, and give rise to a sero-purulent discharge. The tumour may be confounded with urethral polypus; but, on attentive examination, it will be found that the polypus presents itself in the form of a more or less pedunculated tumour, the pedicle of which reaches within the canal, while the prolapsus has the form of a very small swelling surrounding the meatus urinarius—resembling, on a small scale, prolapsus of the rectum. The only method of giving prompt relief is excision. It is not necessary to use an anæsthetic, unless the child be timid and difficult to manage. The patient is placed at the edge of the bed; the thighs are held apart, and the labia are separated so that the surgeon can plainly see the tumour, and draw it down gently by means of a loop of thread. It is then cut off by means of curved scissors. There is little hemorrhage, and it is easily arrested by the application of cold water: if not, an aqueous solution of perchloride of iron may be applied for a few moments. Cold water dressing, and a few applications of solid nitrate of silver, are sufficient to produce cicatrization. The patients have for a few days some pain in passing urine; but this subsides. In one case, the hemorrhage could not be arrested by perchloride of iron; but M. Guersant succeeded by applying ice for twenty-four hours over the hypogastrium and to the vulva. —*Brit. Med. Journ.*, Nov. 17, 1866, from *Bull. Gén. de Thérap.*, Oct. 15, 1866.

29. *Treatment of Infantile Syphilis.*—Dr. R. Forster, of Dresden, gives the results of observation, made on 68 cases in a period of nine years and a half, with regard to the medicinal treatment of infantile syphilis and on certain circumstances connected therewith. He first calls attention to the fact, that syphilis, appearing in newly-born children or soon after birth, generally in the form of pemphigus, is almost inevitably fatal; while the prognosis is more favourable, the farther the appearance of the disease is removed from the period of birth. Dr. Förster divides his cases into two classes: 1, children under half a year old, and 2, children above that age. As bearing on the question whether syphilis can be communicated through the milk, the first class is divided into children which were suckling, and those which were not. The 68 children (28 males and 40 females) varied in age from 12 days to 4½ years; 45 (about 66 per cent.) recovered; and 23 (or 34 per cent.) died. In five cases there was a relapse; in one there were two relapses. Of 36 children who at the commencement, and generally through the course of the treatment, continued to suck, only 6 died; while of 18 children of similar age who were deprived of the breast, 13 died. It also appears from Förster's statistics, that artificially fed children are more imperilled, the earlier the syphilis has appeared. In the 36 cases, the children were, with one exception, suckled by their own mothers; one only by a nurse. There is, according to Förster, no certain proof that an infant suffering from hereditary syphilis can infect its mother. The treatment employed by Förster was chiefly mercurial. Of the 68 cases (increased to 74 by the relapses), protiodide of mercury alone was given in 51; in 21 other cases antisyphilitic remedies were given with mercury; in 2 only no mercury was used. Förster admits that diarrhœa sometimes follows the use of the protiodide of mercury. But, he says, diarrhœa often enough occurs in infantile syphilis when no mercury has been given; and that it did not increase, but diminished, when the use of the protiodide was commenced. He gave the medicine in doses of from one-twelfth to one-eighth of a grain twice daily, generally with powdered gum. Wine was sometimes also administered. Mercurial vapour-baths were not used, because their administration cannot be always intrusted to the attendants, and because the quantity of mercury taken into the system is less accurately defined than when it is given internally. In two cases only, of small atrophic artificially fed children, inunction was employed. Dr. Förster never found salivation to be produced in any of his cases, although large amounts of

mercury were used. Of the 51 cases treated with protiodide of mercury, 17 died and 34 recovered. The quantity of the protiodide taken by the latter varied from 2½ to 8 grains; the average being 5½ grains. The duration of treatment varied from 2½ to 13 weeks; the average being 5¾ weeks. But, if the time occupied in treating the diarrhœa, debility, &c., be included, the average is increased to 8 weeks.—*British Med. Journ.*, Dec. 22, 1866, from *Deutsches Archiv für Klin. Med.*

30. *Influence exerted by Treatment in Hospital upon the Event of Surgical Operations and Accidents.*—Mr. T. HOLMES, Asst. Surg. to St. George's Hospital, in a paper read at the 34th annual meeting of the British Medical Association, has very carefully examined this question, and has shown the total want of exact knowledge with which this subject has been hitherto treated and the great need of more accurate and reliable information as to the condition of our existing hospitals, than the present arrangements of most of them permit us to obtain.

Miss Nightingale and Dr. Farr have intimated that, except as schools of medical and surgical instruction, hospitals have done as much harm as good; *i. e.*, that the diseases generated in hospitals are sufficient to counterbalance the effects of rest, cleanliness, good nursing, good diet, medical skill, &c.

Mr. H. gives the statistical results of a number of operations, with the causes of death, and he shows that the mortality which can be safely charged to hospital influences is very small.

He shows, he thinks:—

"(1) that a large proportion—probably about one-half—of the deaths after surgical operation and accident are due to previous disease, to the inevitable effect of the accident, or to other unavoidable causes; (2) that, of those which remain, pyæmia is the cause of the vast majority; (3) that pyæmia causes a percentage of deaths far smaller than is generally imagined; (4) that there is much reason for believing that the death-rate, due to hospital diseases of all kinds, even in large metropolitan hospitals, does not exceed two in one thousand patients; (5) that no data exist by which we can estimate, or even form a conjecture whether this is a larger or smaller death-rate than would prevail in the same class of cases and patients if treated in smaller hospitals, in detached chambers, or in their own houses; and, therefore, that the influence for evil which hospitals exercise on the progress of this class of cases has been much exaggerated.

"Yet it would be very idle and very uncandid to deny that such an influence does appear to exist. I have seen, in hospitals, operations in themselves of a very slight nature prove fatal by pyæmia; slight wounds converted into grave and often fatal injuries by erysipelas or diffuse cellulitis; ulcers apparently trivial and easily curable, form the starting point of sloughing which has cost the patient his limb or his life. It is true that all these things happen also in private practice; and perhaps their apparent rarity may be due only to the comparative rarity of grave surgical cases in private, as compared with hospital practice. It is also true that, in hospital practice, though such disasters, from the impression they produce on the mind, appear common, they are seen to be really rare when brought to the test of exact record. Yet we cannot bring ourselves to believe that they are not preventable. Only, in order to prevent them, their causes must be exactly determined, which cannot be done without constant record and laborious observation. All this points to the necessity of more methodical and better note-taking and registration in our hospitals, both in town and country.

"But I utterly deny that any great prevalence of hospital diseases in our large hospitals has ever been proved, or, with our present means of information, can be rendered probable. Hence no necessity has been shown to exist either for their removal into country districts, or for breaking up and disintegrating them into smaller institutions."—*Brit. Med. Journ.*, Dec. 22, 1866.

31. *Importance of Preservation of the Periosteum in many Operations.*—Dr. WM. STOKES, Jr., Surgeon to the Meath Hospital, Dublin, in his introductory lecture, remarked:—

"M. Ollier, of Lyons, as I mentioned previously, has directed especial attention to the importance of periosteal preservation and transplantation in many operations. In three cases he has removed large portions of the diaphyses of the long bones with favourable results. In his other cases an epiphysis of the bone had to be removed. One of these I had an opportunity of seeing, in which the upper half of the humerus was removed, with complete restoration of bone. From his experiments, therefore, and clinical experiences, as well as from those of some others who are deeply interested in this subject, and from the cases of Dr. Moon and Professor Langenbeck, the following propositions may be stated:—

I. That in sub-periosteal resections the reproduction of bone is more complete and effected with greater rapidity than after total removal of both bone and periosteum.

II. That the osseous reproductive properties of the membrane vary according as it is taken from the long or the short bones, being greater in the former than in the latter (Ollier).

III. That the normal form of the joint is better preserved when this precaution of leaving the periosteal covering is taken.

IV. That the sub-periosteal resections involve less danger than when conducted on the old principle. This proposition is grounded on the result of experiments on the lower animals, the number of unfavourable results which followed when the membrane was removed being much greater than when it was left.

V. That the difficulties attending the separation of the membrane in the dead subject are not to deter us from attempting the operation on the living, inasmuch as the membrane is less adherent in the latter, and also in the diseased than on the healthy bone.

VI. That resections performed in this manner are more conservative, inasmuch as a re-formation of the part removed is effected, and, being attended with less risk to life than the ordinary resections, a greater quantity of bone can be removed, and in this way in a number of cases the necessity for amputation is diminished. The cases I have alluded to—of Dr. Moon in America, and Professor Langenbeck—are illustrative of the truth of this.

VII. That the chances of much shortening of the limb are diminished by this method, as shown by the results of the ankle-joint resections during the late Schleswig-Holstein war.

VIII. That in addition to these the modified Rhino and Urano-plastic operations demonstrate that the happiest results have been obtained by this application of experimental physiology to practical operative surgery."—*Med. Press and Circular*, Dec. 12, 1866.

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32. *Injurious Effects of Dressings after Amputations.*—Dr. Burow brought this subject before the profession in 1859, with the object of showing that much of the mortality that follows operations is really due to the employment of dressings. He adduced the slight mortality that had attended his own cases in which these were abstained from as compared with that exhibited by Pauli's statistics. He is now enabled to refer to an additional number of his own cases, making ninety-four altogether, in which the mortality has proved quite trivial. And yet these include numerous cases of amputation of the thigh, leg, arm, &c., many of the patients upon whom the operations were performed being very poor, and treated under disadvantageous sanitary conditions. The stumps in all, however, were left freely exposed to the air, unencumbered with dressings.

As to the execution of the operations, Dr. Burow, when possible, always prefers the tourniquet to manual compression, and performs flap operations whenever the condition of the soft parts admit of this. He disapproves of shaving off the periosteum before dividing the bone, and is very particular in tying every bleeding vessel, believing it far better to tie some of these superfluously than to have the stump disturbed by subsequent bleeding. The surface of the stump is to be left quite exposed until a serous exudation begins to issue, which is generally the case within half an hour, although in some cases we may have to wait some hours for this. The flaps are then brought together by means of two or

three sutures and three or four strips of adhesive plaster, these last sufficing without the sutures in amputation of the arm. After the patient has been placed in bed the stump is only covered with a piece of linen to protect it from the flies, and in the case only of their being much pain ice is resorted to. The very great swelling which takes place in the stump during the second and third days is evidence of the mischievous effects which must result from its confinement by dressings. By Dr. Burow's plan nature is left unimpeded in her process of restoration of the collateral circulation in the divided vessels, and emboli with pyæmia are far less likely to occur. If the swelling of the edge of the stump be very great, the threads may be divided at their points of insertion and left to be discharged, the adhesive plasters being renewed when they become loosened. The discharges are to be gently pressed out from the deeper portions of the wound, and the greatest attention must be paid to cleanliness. How much less reaction follows this simple procedure is seen by the rapidity of the recoveries, patients who had undergone amputation of the thigh having repeatedly left their beds on the eleventh day, the stump being guarded by a small pledget kept on by adhesive plaster. For some years past Dr. Burow has been in the habit of applying to wounds attended with abnormal discharges the acetate of aluminum lotion, which is a cheap and excellent preparation for hospital practice, removing all bad smell. So after amputation, when the discharge is considerable, he resorts to it.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1867, from *Deutsche Klinik*, No. 24.

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33. *New Method of Amputating at the Shoulder-Joint.*—JAMES SPENCE, Esq., Professor of Surgery in the University of Edinburgh, describes (*Lancet*, Feb. 2d, 1867) the following method of amputating at the shoulder-joint for which he claims the following advantages. 1st. The fulness and better form of the stump after the healing. 2d. In this the posterior circumflex is not divided except in its small terminal branches in front, whereas, both in the large deltoid flap and the double flap methods, the trunk of the vessel is divided in the early steps of the operation, and, retracting, often gives rise to embarrassing hemorrhage. Besides, in the case of the single flap method, the vitality of the flap must be seriously compromised, as it depends chiefly on that vessel for its arterial supply. 3d. The great ease with which disarticulation can be accomplished.

He describes this mode of operating as follows:—

"Supposing the right arm to be the subject of amputation. The arm being slightly abducted, and the head of the humerus rotated outwards, if possible. With a broad strong bistoury I begin by cutting down upon the inner aspect of the head of the humerus, immediately external to the coracoid process, and carry the incision down through the clavicular fibres of the deltoid and pectoralis major muscles till I reach the humeral attachment of the latter muscle, which I divide. I then with a gentle curve carry my incision across and fairly through the lower fibres of the deltoid towards the posterior border of the axilla, unless the textures be much torn. I next mark out the line of the lower part of the inner section by carrying an incision, through the *skin and fat only*, from the point where my straight incision terminated, across the inside of the arm to meet the incision at the outer part. This insures accuracy in the line of union, but is not essential. If the fibres of the deltoid have been thoroughly divided in the line of incision, the flap so marked out can be easily separated (by the point of the finger without further use of the knife) from the bone and joint, along with the posterior circumflex trunk, which enters its deep surface, and drawn upwards and backwards so as to expose the head and tuberosities. The tendinous insertions of the capsular muscles, the long head of the biceps, and the capsule are next divided by cutting directly on the tuberosities and head of the bone; and the broad subscapular tendon especially, being very fully exposed by the incision, can be much more easily and completely divided than in the double flap method. By keeping the large posterior flap out of the way by a broad copper spatula or the fingers of an assistant, and taking care to keep the edge of the knife close to the bone, as in excision, the trunk of the posterior circumflex is protected. The only vessel which bleeds is the anterior circumflex divided in the first incision, and here, if neces-

sary, a pair of catch forceps can be placed on it at once. In regard to the axillary vessels, they can either be compressed by an assistant before completing the division of the soft part on the axillary aspect, or, as I often do in cases where it is wished to avoid all risk, by a few touches of the bistoury the vessel can be exposed and can then be tied and divided between two ligatures, so as to allow it to retract before dividing the other textures.

In this, as in all amputations, I make a point of gently drawing out the large nerves and cutting them so short that they cannot become implicated in the cicatrix, but may be so deeply covered as to save them from liability to irritation from external influences. In cases where the limb is very muscular I dissect the skin and fat from the deltoid at the lower part, and then divide the muscular fibres higher up by a second incision, so as to avoid redundancy of muscular tissue. After arresting bleeding I bring the edges together with a few points of suture, leaving an opening at the lower and back part, through which the ligatures are brought out and the free escape of blood and other discharge permitted.

The dressing I use is very simple, being merely a flat pad of lint secured by a six-tailed split cloth, the tails being tied on the opposite side of the body.

Prof. Spence does not recommend this plan under *all* conditions. "There are," he says, "cases in which I would prefer the operation by double flap, such as those for malignant tumour, where we wish to remove all the muscular tissue of the deltoid, and leave nothing but skin flaps. In such cases a single long flap dissected from the subjacent tissues, and depending entirely for nourishment on the vascular supply of its base, is more apt to slough than two smaller ones. In a case of a large malignant tumour, for which I amputated at the shoulder about five weeks ago, and in which, along with the tumour, I removed the whole of the deltoid and a considerable portion of the great pectoral, I operated by dissecting a single large skin flap. But a very large portion of it sloughed, and though the case has gone on favourably, and the wound has nearly cicatrized, yet I feel satisfied that two smaller flaps would have given a better result; and I mention this case as an example of a class for which I think this plan of operating unsuitable. I may, however, say, after considerable experience in amputation at the shoulder-joint, that there are, I believe, very few cases in which the method I have been describing will not be found suitable, and where it is I have no hesitation in recommending it as being preferable to any other method I have ever practised.

34. *Ligature of Common Carotid Artery.*—Dr. J. J. Nason records (*Brit. Med. Journ.*, Feb. 2, 1867) a case of this in a boy who had been struck in the neck with a stable fork. Dr. N. found "on the left side of the neck a horizontal wound, from three to four inches long, with slightly inverted edges; it was about an inch and a half below the angle of the jaw, and just over the course of the carotid artery. On the right side of the neck was a darkish swelling, of about the size of half a lemon, having in its centre a darker blood-stained spot, which as nearly as possibly corresponded in situation with the wound on the left side. From the situation of the external wound, from the great loss of blood—the blood coming principally from the mouth, denoting injury to the pharynx, from the continued ecchymosed swelling of the right side, and from his great collapse I inferred that the carotid vessel or vessels had been wounded. For a time I was unable to feel pulsation in any of the branches given off by either carotid; but, after a time, I could detect pulsation in the facial and temporal arteries of the right side, but not of the left. I summoned to my assistance my friend Dr. Rice, who agreed with me that the left carotid artery, just before the division, or the left internal carotid alone, or even in conjunction with the external carotid, had been wounded. The boy's state was one of great collapse; and, as it was doubtful whether the wounded vessel was the common carotid, or one or both of its chief divisions, and it was expedient to add as little more to the shock as possible, and to save every drop of blood, we resolved to tie the common carotid in the part most accessible, namely, in the lower part of the carotid triangle. The operation was performed without much difficulty, and without the loss of a drachm of blood; it was not followed by

paralysis, or any untoward symptom. The ligature came away on the twelfth day, the wound gradually healed up, and the boy steadily progressed to convalescence, and has remained perfectly well ever since."

35. *Lithotomy.*—The *British and For. Med.-Chirurg. Review*, for January of the present year, contains an interesting article on this operation by Mr. W. F. TEEVAN, Surgeon to the West London Hospital, in which the author endeavours to decide some points still in controversy in regard to the modes of performing the operation.

Mr. T. advocates the use of the sound resembling a lithotrite, in preference to that similar in shape to a catheter. If a short-beaked sound be used, he says, its end is so very free that it insinuates itself into the vacuities of the bladder, and a stone rarely eludes discovery. He states that a stone may be struck, and no metallic click heard. He has seen two calculi, composed of alternate layers of fleshy and earthy matter, with a fleshy covering. The promontory of the sacrum is sometimes struck, which gives a dull sound; and in such cases the operator, on opening the bladder, has been surprised to find no stone. Mr. T. considers it very important that the staff be firmly held; the steadier the staff, the easier and speedier will the surgeon's knife glide into the bladder. When requested to hold a staff, Mr. T. says he always uses "both hands, one being placed over the other, the lower one resting on the crest of the pubis. In this way the staff can be held with a fixity which is unattainable by any other method. The penis can be compressed into a very small space against the crest of the pubis, and another assistant can keep the scrotum out of the way. Most staffs are too long; the shorter the staff, the steadier it will be."

Mr. T. advocates the use of a knife of the same breadth, both for boys and adults, as in either case we desire to introduce the same sized instrument, the left forefinger. "If," he says, "the breadth of the ordinary lithotomy knife were the same as that of the gorget, the surgeon would never experience any difficulty in reaching the bladder, and the parts would escape that bruising and laceration which give rise to suppuration, phlebitis, and pyæmia."

Mr. T. considers that the reason of the stone so often escaping from the forceps is that the blades are not sufficiently bent inwards, or bellied.

Mr. T. advocates commencing the incision in the perineum low down, *i. e.*, one inch above the anus, as the surgeon can then thrust in his knife more boldly than when the high incision is resorted to, and can generally at the first incision hit, or get close to the staff.

The special point which Mr. T. lays down is, that "*The limited incision of the prostate in lateral lithotomy is wrong in principle, and mischievous in practice.*"

Mr. T. states that he has experimentally ascertained the following facts:—

"1. The prostatic urethra will only admit the terminal joint of the forefinger without laceration.

"2. If the introduction of the forefinger be continued, the mucous membrane splits longitudinally as the second joint is passing through. The urethra splits in the roof because the convexity of the joint is pressed against that part. In lateral lithotomy the incision into the prostate prevents laceration of the roof of the prostatic urethra.

"3. If a stone half an inch in diameter be extracted through a prostate in which no incision has been made, the mucous membrane of the floor of the urethra is lacerated and the prostate slightly torn; the capsule remains perfect, but the orifices of the ejaculatory ducts can seldom be distinguished.

"4. If a calculus half an inch in diameter be extracted through a prostate which has been partially incised, as in lateral lithotomy, the capsule and orifices of the ejaculatory ducts remain perfect.

"5. Stones upwards of half an inch in diameter, when extracted by the median operation, lacerate more or less the prostate and its capsule, and obliterate the orifices of the ejaculatory ducts.

"6. Calculi of one inch in diameter and upwards, when extracted through a prostate which has only been partially incised, in the lateral operation, lace-

rate the gland and its capsule completely in a direction downwards and outwards, and obliterate the orifices of the ejaculatory ducts.

"7. If a calculus be extracted through an aperture which was made by cutting and not by laceration, then the orifices of the ejaculatory ducts can always be distinguished.

"8. The so-called dilatation of the prostate is complete rupture.

"9. When a stone is extracted from the bladder by means of a limited incision and subsequent so-called dilatation, either in median or lateral lithotomy, there is always more or less eversion of the gland; that is, in such cases, the stone has a tendency to enucleate the gland from its capsule in a direction forwards. Thus, therefore, only a very small stone can be extracted through a partially incised prostate without completely lacerating the gland and its capsule. In fact, if an ordinary sized stone be extracted, either in median or lateral lithotomy, by a limited incision, the prostate is found split into two, the halves being held together by a remnant of the capsule about half an inch broad. Some persons would object to deductions drawn from experiments made on the dead body, and say that results obtained after death must be very different to what happens after lithotomy on the living. It must, however, be remembered that the mechanical properties of the fasciæ are not altered for some time after death, and therefore experiments made a few hours post-mortem afford similar results to those which would have ensued on the living.

"From a personal examination of all the pathological museums in London, I have ascertained the following facts:—

"1. That out of the very many specimens and bladders and prostates after lithotomy, there is no unequivocal specimen which shows that an ordinary sized calculus can be extracted from an ordinary sized prostate, by means of a limited incision and the subsequent so-called dilatation, without complete rupture of the prostate and its capsule.

"2. That in extracting ordinary sized calculi through the prostate, not only is the gland and its capsule completely ruptured, but the rent extends into the bladder as far usually as the orifice of the left ureter.

"3. That when there has been much laceration and bruising of parts, the orifices of the ejaculatory ducts can no longer be distinguished.

"4. That there are several bladders and prostates of persons who have lived upwards of ten years after lateral lithotomy, and in such specimens the cicatrix can be seen extending into the bladder nearly to the orifice of the left ureter.

"5. That a fistula in the bladder communicating with the rectum is not an uncommon occurrence after lithotomy—that such fistula is the result of laceration, and would not appear to be of much consequence.

"6. That in ordinary lithotomy, the prostate is completely split into two, the halves being generally held together by a remnant of the capsule about half an inch broad.

"7. That the most frequent cause of death after lithotomy would seem to be extensive suppuration, followed by phlebitis and pyæmia, set up by the laceration and bruising of parts.

"8. That infiltration of urine after lithotomy must be regarded as a surgical curiosity.

"It will thus be seen, whether cases of lithotomy on the living or dead be examined, the same conclusion will be arrived at—that an ordinary sized stone cannot be extracted through an ordinary-sized prostate, by means of the limited incision and subsequent so-called dilatation, without complete rupture of the gland and its capsule.

"A subject of very great importance which has not yet received the attention of the profession, is the occurrence of impotence after lithotomy. When it takes place, it is from laceration of the mucous membrane around the orifices of the ducts, and their subsequent plugging. My objection to the median operation is that the mucous membrane generally gets lacerated in the floor of the urethra, and the prostate occasionally split into halves in the paths of the ducts.

"The following are the conclusions at which I have arrived:—

"1. When lateral lithotomy is performed, the stone ought always to be cut out, and not torn out.

"2. That the median operation is not justifiable for the extraction of calculi which are upwards of half an inch in diameter; for if such sized stones be removed by that process, obliteration of the orifices of the ejaculatory ducts and permanent impotence will result.

"Lateral lithotomy in the boy is such a very successful operation, and if performed without laceration of the parts causes no injury to the seminal ducts, that no possible advantage can be gained by substituting the median operation for it, inasmuch as that procedure cannot be accomplished in the child without the laceration of parts, and such laceration will occur in the very spot we ought to avoid—namely, in the floor of the urethra. The only cases in which I consider the median operation eligible, is in those rather rare instances in adults in which we have a small stone and an enlarged and diseased prostate, and in which lithotrity may not be considered advisable."

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36. *Ovariotomy; Pedicle secured by Silver Wire after the Failure of the Actual Cautery to arrest the Hemorrhage; Cure.*—Dr. J. MARION SIMS records (*British Medical Journal*, Jan. 19, 1867) a very instructive case of this; the subject of it was an American lady residing in Paris, 52 years of age, the mother of six children. She had always enjoyed good health until the spring of 1865, when she had occasional attacks of nausea and vomiting, which resisted all remedies, when she consulted Dr. Arnal, who diagnosed an ovarian tumour on the right side.

November 9th, Dr. Sims saw the patient, in consultation with Dr. Beylard. She then measured 53 inches around abdomen, and 23 inches from ensiform cartilage to pubes. Dr. S. diagnosed a multilocular ovarian cyst, probably without adhesions, and advised its extirpation as the only hope of a cure.

"The operation was performed on Sunday, November 18th, at the Hôtel du Pavillon de Henri IV. at St. Germain. I was assisted by Drs. Beylard, Johnston, Darby, Buckler, Lailler, and Thierry-Meig. Dr. Beylard administered ether. An incision, three inches long, was made in the usual way through the abdominal walls, and the cyst was exposed. The trocar was introduced, and emptied one of its largest compartments of about ten pounds of a dark brown serous fluid. Five other compartments of the cyst were in turn punctured; but in two of them the fluid was too thick to flow through the tube of the trocar. The other three gave vent to about twenty pounds more of fluid. To expedite the operation, the internal incision was enlarged to the extent of five inches, which allowed me to extract the remainder of the tumour *en masse*. It was attached to the right broad ligament. The pedicle was short and broad. When spread out in the clamp, it measured four and a half inches in width. Its veins were large and tortuous. It was severed by the actual cautery, according to the plan of Mr. Baker Brown.

"On removing the clamp, blood began to ooze from the end of the line of cauterization farthest from the fundus uteri. The bleeding seemed to be chiefly from the open mouths of the large veins. An inch of tissue including the veins was encircled in a loop of silver wire, which was drawn tightly, twisted firmly, and cut off close to the twist. The mere mechanical manipulation of doing this unfortunately tore open the whole extent of the line of cauterization, and blood oozed out from every part of it. To secure this long line (nearly four inches) of bleeding surface, it was necessary to introduce five other loops of silver wire, embracing as many segments of the bleeding pedicle, each of which was twisted separately and cut off close, as before described. The uterine artery spouted furiously, and required a special ligature. After the bleeding was wholly controlled, the pelvic and abdominal cavities were thoroughly cleared of the fluid that unavoidably escaped into them, and the external incision was closed by a continuous suture of silver wire. The whole of the peritoneal membrane, whether lining the walls of the abdomen or investing the intestines, was deeply congested, and had a red granular appearance. The tumour had no adhesions; and, notwithstanding the appearance of the peritoneum, there was no unusual amount of serum in its cavity. She was fully under the influence of ether only during the early period of operation, and recovered easily from its immediate effects. Reaction was established in two hours with a pulse at 108

which at midnight fell to 96. She vomited only twice during the afternoon, and was wholly free from pain or suffering of any kind.

"About two hours after the operation, the urine (fourteen ounces) was drawn off by the catheter; but after this she passed urine spontaneously and freely. The bowels were moved spontaneously on the third day. She slept every night without anodynes, and took nourishment with a relish from the first day.

"There was nothing whatever worthy of remark during the convalescence. The external wound healed perfectly by the first intention. The silver sutures were removed on the tenth day after the operation. She sat up and walked across the room on the eleventh day, and on the twenty-second day she returned to her house in Paris perfectly well.

"The solid part of the tumour removed *en masse* weighed eleven pounds, and the fluid thirty-two pounds. Dr. Johnston and others present estimated the loss of fluid during the operation at eight or ten pounds. The whole amount was probably near fifty pounds.

"In one of the cysts the fluid was straw-coloured, and another coffee-coloured, and in one it was as dark as sugar-house molasses; in others it was of the consistence of jelly.

"The operation of removing the tumour lasted twenty minutes, and the time taken in securing the pedicle was about twenty minutes more.

"Ever since the first introduction of the use of silver sutures in 1849, I have advocated the application of the metallic ligatures to the pedicle in ovariotomy. In 1858, this view was held forth in my paper, On Silver Sutures in Surgery. Since then I have carried it out in practice.

"Dr. Nélaton performed the operation of ovariotomy in Paris in May, 1864, on a patient of Sir Joseph Oliffee, and kindly allowed me to secure the pedicle with silver wire. It was transfixed by a double wire, which was cut in two, and each half was twisted tightly on opposite sides of the pedicle. This was then cut off near the ligatures and returned into the cavity of the abdomen, and the external wound was closed by silver sutures. Unfortunately for the poor patient, she died on the fifth day after the operation, of blood-poisoning from peritoneal exudation. But, fortunately for science, a *post-mortem* examination showed the metallic ligatures entirely imbedded in the tissue of the pedicle, and so perfectly sacculated that I was obliged to cut into its structure to find them.

"The wire had cut into the tissue, and this had healed behind its track, and thus it was wholly covered up and hidden from view. I was able to foretell what would be its method of action by observation from analogy. In 1850, by means of a silver wire, I made the effort to strangulate a warty excrescence on the cheek of a lady sixty years old. It was of about the size of the end of the little finger, and projected at least half an inch above the surface. It was hard to the touch, and of a reddish tint. On tightening the wire at its base, the top became of a deep purple colour, showing that its circulation was momentarily arrested. On visiting my patient the next day, I was surprised to find the excrescence of its original colour, without the least sign of a disorganizing process. On the contrary, its circulation was going on as vigorously as before the application of the wire. On a minute examination, I found that the wire had cut a bed for itself entirely around the structure embraced, and that the tissue so cut had overlapped the wire and healed over it, thus encasing or sacculating it completely, and this within the short space of twenty hours. Of course, it was a mistake to apply the wire at all with the idea of producing a slough, and it was clipped and drawn out."

"It was a great improvement," Dr. S. remarks, "in the operation of ovariotomy when, a short time ago, the pedicle was drawn out and secured by a clamp externally to the abdomen, instead of being tied with a cord, as formerly, which was then allowed to hang from the lower end of the external wound, thus acting the part of a seton and exciting the action which it should have been our object to prevent. But I think a still greater advance is made, when we can secure the bleeding pedicle in such a way as safely to replace it within the abdominal cavity, and thus allow the external wound to be healed throughout its entire length by the first intention.

"For this desirable end we now have two methods: the one of treating the

pedicle by the actual cautery, so successfully practised by Mr. Baker Brown; the other by means of the metallic ligature.

"The actual cautery does not always succeed; and the case above described clearly proves that we have a safe and sure resource in the silver ligature."

OPHTHALMOLOGY.

37. *A Modification of the Operation for Strabismus.*—Dr. RICHARD LIEBREICH, Professor of Ophthalmology, Paris, in a memoir on this subject, a copy of which he has politely sent us, states: "It is well known that, if the internal rectus muscle be divided in the manner now generally practised, it is possible to correct a squint of from 2 to 2½ lines in adults, and from 2½ to 3 lines in children. But, if the deviation exceed this extent, it will be necessary to perform two, three, or even more, successive operations."

To remedy, if possible, these defects, Prof. L. determined to investigate, with greater accuracy, *first*, the anatomical relations of the muscles, with regard to the capsule of Tenon, the sclerotic, conjunctiva, caruncle, etc.; and, *second*, the mechanical effect of the operation for strabismus.

From this investigation he has been led to call special attention to three points, as being particularly important with regard to the performance of the operation for strabismus.

"1. The connection of the muscle with the capsule of Tenon is twofold. On the one hand, there is the annular connection of the posterior capsule and its sheath-like processes (which are reflected towards the orbit) with the belly of the muscle; on the other, the firm adhesion of the anterior half of the capsule to the surface of the end of the muscle, which penetrates into the capsule.

"2. The conjunctiva is firmly connected with the outer surface of the capsule of Tenon, from the edge of the cornea to an irregularly circular, sharply defined, marginal line; and, consequently, it stands in a very important relation to the muscles of the eye.

"3. The caruncle, together with the semilunar flap, rest upon a band-like ligament, which passes from the capsule of Tenon toward the edge of the orbit. Now, when the internal rectus is contracted, and the eye rolled inwards, this band is rendered tense; and the caruncle, which is fixed to it, is consequently drawn in towards the internal surface of the orbit. But the outer edge of the caruncle, together with the semilunar fold and an adjoining portion of conjunctiva, are drawn backwards into a furrow. This is partly due to the fact that, during the movements of the eye, the conjunctiva lies, up to a certain point, in close apposition to the eyeball; and partly also to the fact that, when the muscle contracts, and on account of its connection with the anterior half of the capsule, draws the latter backwards, it is necessarily followed by the conjunctiva (which is likewise connected with the capsule), by the semilunar fold and the caruncle.

"From a consideration of the first of these three points, we learn with regard to the mechanical effect of the operation for strabismus, that a division of the insertion of a muscle can only be brought about by a division of the portion of anterior capsule which covers the muscle. For this portion, which passes over the muscle to become attached to the sclerotic just before the insertion of the tendon, keeps the muscle in a fixed position with regard to the sclerotic; so that, if we attempt to sever the tendon from the sclerotic without dividing this portion of the capsule, the tendon would become reunited exactly at its original point of insertion; so that, in fact, it would not have receded at all. It would, however, be not only very difficult, but almost impossible, to avoid incising this portion of the capsule, as, on account of its intimate adherence to the insertion of the muscle, it is always divided simultaneously with it. Even in the subconjunctival operation, although the conjunctiva which covers this portion of

the capsule is left intact, the capsule itself is divided along the whole breadth of the insertion of the muscle. This vertical incision of the capsule of Tenon, which always takes place simultaneously with the tenotomy, is the cause of the retrocession of the anterior part of the capsule covering the muscle, and of the annular portion of the capsule which keeps the muscle fixed, and consequently, also, the retrocession of the muscle itself. By increasing the length of the incision in the capsule (Graefe's division of the lateral processes), we may certainly produce a somewhat greater retrocession; but, owing to the second point mentioned above, it cannot be very extensive. For the connection of the conjunctiva with the capsule does not permit a more considerable retrocession of the latter, unless we make an extensive vertical incision in the conjunctiva, analogous to that in the capsule, and thus jointly divide the conjunctiva, capsule, and tendon. Such a proceeding is, however, accompanied by considerable disadvantages. On account of the connection between the muscle, capsule, and caruncle, the divided muscle draws the caruncle and the semilunar fold backwards and inwards, as well as that portion of the conjunctiva which was divided by the vertical incision. In consequence of this, these parts assume the same position when the eye looks straight forward, which they do in the normal eye when it is turned very far inwards. At the same time, the distance between the semilunar fold and the inner edge of the cornea is increased, as also the portion of sclerotic visible at the inner angle of the eye; and this gives to the eye that peculiarly disagreeable appearance which was so characteristic of the old operation."

Based upon the above considerations, Prof. L. recommends the following modification of the operation for strabismus:—

"If the internal rectus is to be divided, I raise with a pair of forceps a fold of conjunctiva at the lower edge of the insertion of the muscle; and, incising this with scissors, enter the points of the latter at the opening between the conjunctiva and the capsule of Tenon; then carefully separate these two tissues from each other as far as the semilunar fold, also separating the latter, as well as the caruncle, from the parts lying behind. When the portion of the capsule which is of such importance in the tenotomy has been completely separated from the conjunctiva, I divide the insertion of the tendon from the sclerotic in the usual manner, and extend the vertical cut, which is made simultaneously with the tenotomy, upwards and downwards—the more so if a very considerable effect is desired. The wound in the conjunctiva is then closed with a suture.

"The same mode of operating is pursued in dividing the external rectus; and the separation of the conjunctiva is to be continued as far as that portion of the external angle which is drawn sharply back when the eye is turned outwards."

Prof. L. claims the following advantages for his proceeding:—

"1. It affords the operator a greater scope in apportioning and dividing the effect of the operation between the two eyes.

"2. The sinking back of the caruncle is avoided, as well as every trace of a cicatrix, which not unfrequently occurs in the common tenotomy.

"There is no need for more than two operations on the same individual, and therefore of more than one on the same eye."

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38. *Quinia in Rheumatic Iritis.*—M. Galezowski had under treatment a young man affected with rheumatic iritis of the right eye, subsequent to rheumatism. The disease had been treated in various ways during six months, when M. Galezowski applied sulphate of atropia to the eye, and gave quinia in large doses internally. The disease was cured in a fortnight. In another case, also of rheumatic iritis with painful swelling of the right foot, M. Galezowski gave sulphate of quinia successfully. From these and similar facts, he concludes that sulphate of quinia is one of the most efficacious remedies for rheumatic iritis.—*Brit. Med. Journ.*, Jan. 19, 1867, from *Gaz. Méd. de Lyon.*

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39. *Pathology of Hemeralopia.*—The *Ophthalmic Review* for October last contains an interesting paper by Prof. A. Quaglino, of Pavia, translated from

the *Giorn. d'Oftalm. Ital.*, vol. viii. p. 23. Prof. Q. states that night blindness is a very common affection during spring and summer among the Italian peasantry, and soldiers in camp, sometimes affecting whole regiments of the latter, so as to render them unfit for service between twilight and dawn of day.

Prof. Q. thinks it important to call attention to this affection, with the view of showing that, instead of its being the nervous disease it was formerly considered, it is rather a symptom of a material and recognizable morbid process, which, though slight, and susceptible of spontaneous cure in the early stages of the disease, provided the patients withdraw themselves from the action of bright light, yet may be in time and after repeated recurrences, the point of origin of more serious alterations of the retina and optic nerve that may eventually lead to amblyopia or even amaurosis.

Prof. Q. gives the following as the constant alterations which he has found, on examination with the ophthalmoscope, in thirty soldiers. They were observed at different epochs from the commencement of the disease—some on the first, second, or third day, and others after weeks or months :—

"1. Whitish-gray haziness of the whole retina, especially around the disk and along the retinal vessels, after invading the disk itself. This haziness is more or less intense according to the duration of the disease, and the degree that the vision has become impaired. In consequence of it the subjacent vascular layer of the choroid is distinguished with much difficulty by the ophthalmoscope. The retinal haziness gradually disappears in soldiers after some days in a dark room, or after other treatment.

"2. Manifest congestion of the veins ; they are also tortuous, and contain a dark blackish blood, seeming almost coagulated.

"3. The central arteries are often enlarged in the region of the disk, but when the disease has lasted for some time, they appear lessened and hidden here and there in the parenchyma of the retina, which presents a thickened appearance.

"4. In many cases, when the disease is recent, the disk looks red or roseate through most delicate injection of the capillaries, and development of collateral vessels. In these cases also the rete of vorticose choroidal vessels appears closer, the vessels redder and more swollen.

"5. The obscuration of the retina is in time dissipated, the purple transparency being restored; but both the arteries and the veins become smaller and more slender, and the contours of the disk lose their regularity and are fringed by streaks of dark pigment. Many times the radial fibres of the optic nerve become opaque, so as to render the bounds of the disk indistinguishable from the rest of the retina, which is also slightly clouded.

"6. When the disease has many times recurred, and the patient become amblyopic, the appearances first mentioned are usually replaced by those of atrophy of the vessels and disk, attended by the characteristic white reflection of the nervous substance, more or less marked.

"It results from the alterations described that the process on which the hemeralopia depends is seated in the extremity of the optic nerve, in the retina, and in its vessels; and that the affection must be considered as a venous stasis, accompanied by serous infiltration of the retinal substance, and of the nervous fibres of the optic nerve, which form the disk.

"This serous exudation impairs the transparency of the retina, renders it grayish and consequently visible, and compresses the layers of rods and cones, making them less apt to receive the rays which emanate from objects illuminated by too weak a light, such as that of twilight or of night.

"The symptom of hemeralopia is not confined exclusively to this single species of retinitis, and does not constitute, *per se*, a special form; for it is often found in syphilitic retinitis, in serous retinitis albuminurica, in amaurosis from progressive atrophy of the optic nerves with or without pigmentary degeneration, and sometimes also in arthritic or rheumatic choroiditis, in which there is an evident compression of the bacillary layers.

"Hemeralopia is a frequent symptom in cases of pellagra, terminating sometimes in progressive atrophy of the optic nerves, a result promoted and sustained by chronic pio-meningitis, which is developed in many cases, and the

occasion of all those other nervous perturbations accompanying the disease to which we are referring.

"The predisposing causes of this disease are no doubt those abnormal conditions of the abdominal viscera which favour venous stasis in the region of the superior cava, such as long-continued intermittent fevers which have left infarctus in these viscera, gastric fevers, and the scorbutic dyscrasy. The exciting causes are the dazzling light of the sun, the white reflection of the earth, or the glittering one of water, through which the retina, by excess of stimulus, becomes irritated and congested. Probably some part is also played by suppression of perspiration and the rheumatic poison.

"Hemeralopics have generally a leucophlegmatic appearance, are of a yellow colour, or even a decidedly jaundiced hue, showing the disturbed action of the liver, and have swollen gums readily bleeding.

"Hemeralopia frequently recurs in soldiers who return to camp too soon after treatment, and in the same season in which the disease attacked them. It often supervenes in spring or in the following summer. We have observed cases in which the patients were hemeralopic for the fourth or fifth time, and who yet recovered perfectly."

MIDWIFERY.

40. *Protracted Utero-gestation.*—Dr. C. Joynt relates, *Dublin Quart. Journ. Med. Sci.*, Nov. 1866, a case of this, which seems to have been most carefully investigated and with the result of showing that the minimum duration of pregnancy must have been 317 days, or about six weeks more than the average. The subject of the case was a lady about 30 years of age, who had been pregnant six times, the pregnancy on two occasions ending in miscarriage. She suffered from excessive menstruation, and neuralgia of the ovaries, and was also subject to frequent hystero-epileptic fits.

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41. *Postural Treatment in Prolapse of Umbilical Cord.*—Dr. J. G. Wilson, Lecturer on Midwifery in Andersonian University, in an article in the *Glasgow Medical Journal* for Nov. 1866, extols the postural treatment in prolapse of the umbilical cord first described by Dr. J. G. Thomas, of New York, and relates two cases in which he resorted to it with success. This method he says is "so simple and so safe, 'and so in accordance with common sense,' that I believe it will commend itself to general adoption, and that it will ere long supplant and supersede all the modes of management commonly had recourse to in cases of descended cord."

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42. *Fracture of the Pelvis in a Pregnant Woman; Recovery.*—Dr. Fairbank reported to the Obstetrical Society of London, the case of a woman who in the sixth month of her pregnancy was crushed between the wheel of a wagon and the parapet of a bridge. Immediately on this happening there was a gush of blood from the vagina, and on removing the woman to her home, which was not far off, Dr. Fairbank was able to find that the pelvis was fractured, the fracture passing through the horizontal ramus of the pubes into the obturator foramen. The patient was chilly all over, her pulse was slow, and she was very pale. This happened in the afternoon, and when visited later her pulse was found to be rather better, but as the evening wore on she became more and more restless, the pulse rose to 150 per minute; still she was able to pass urine. She spent a bad night, with occasional vomiting, and in the morning her abdomen was tense, her countenance anxious, and no fœtal sound could be heard. She got several doses of opium, and warm fomentations were applied over the injured parts. On the third day she was still more feeble, and her pulse was softer, but the vomiting still continued, and there was a certain amount of tenderness over the abdomen. On the 4th she was better, the pulse was 100, urine natural, and a strong belt was applied so as to compress the pelvis; from this she felt great

relief. She continued to improve, and in two months she was able to walk about, but the right side of the pelvis continued flatter than the left. Three months after labour came on, and the fœtus was quickly expelled. When examined it presented all the appearances of only having reached a six months' maturity. It came to the knowledge of the reporter that she had been delivered of another child twelve months after this, a midwife having been employed at first, but, from the tedious nature of the case, that a surgeon had been called in. Too much time had been wasted before application had been made to this gentleman, and the patient sank after the child had been brought into the world.—*Med. Times and Gaz.*, Jan 19, 1867.

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43. *Criminal Abortion in India.*—Dr. SHORT, of Madras, sent to the Obstetrical Society of London, a report as to the frequency of criminal abortion in India. In 1863, 27 individuals were condemned for being concerned in such crimes, which, considering the amount of cases that escape detection, shows how common it must be. He detailed the symptoms which followed abortion, being simply those of recent delivery in a more or less mitigated degree, and then proceeded to enumerate the substances employed for procuring the premature expulsion of the fœtus. These were, first, bamboo leaves pounded in a mortar, the juice of which is said to be extremely powerful, generally causing the immature ovum to be expelled in from two to three days. The juice of the *Euphorbium Tirucali*, when applied to the os by means of a rag on the point of a stick, is also said to insure this in from twelve to twenty-four hours. Other species of the same genus are employed in like manner, and for a similar purpose; so also is the *Caloptris gigantea*. The root of the *Plumbago Zeylanica* is employed with a like intention, both locally and through the stomach; when applied in the former manner, the root is often shaved down to a taper point, and so introduced into the os uteri. In one case which came under this gentleman's notice, the base of the uterus was perforated in three places, as a result of the local application of the hard roots or the impregnated cloth upon a stick. —*Ibid.*

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44. *Ovarian Pregnancy; Delivery of the Fœtus per Anum; Recovery.*—A merchant's wife, aged 35, of Berlin, was, as primipara, in 1856, safely delivered. In November, 1862, she had severe pain in the left hypogastric region, which showed an egg-shaped swelling. The catamenia ceased for nine weeks, but pregnancy was not made out. The patient was then seen by Dr. Hildebrandt, who made the diagnosis of a pregnant (?) uterus, without, however, being able to give a decided solution of the question. At the next consultation, an entirely normal pregnancy was diagnosed by one physician, and denied by the other. In the seventh month of pregnancy, the patient took a great many laxatives on account of constipation of the bowels. In the meantime Dr. Julius Beer was called in, who examined the uterus very closely, and gave the opinion that the woman was not pregnant, but that an abortion had taken place some time before. The tumour in the left hypogastrium he did not find. On January 2d, 1864, after an almost colliquative diarrhœa, with very great pain, two symmetrical skull-bones, the parietal bones of a fœtus, were passed *per anum*. Pathological anatomy has shown that in such cases a sac is formed, which is united with a loop of intestine, whereupon this intermediate partition-wall is broken through to allow the bones to pass. The patient remains well and without pain.—*Brit. Med. Journ.*, Feb. 23, 1867, from *Gesellschaft für Heilkunde.*

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Structure and Functions of the Parent Gland Cells, and Causes of Certain Forms of Rheumatic Disease.

We have received from Professor J. H. SALISBURY, of the Charity Hospital Medical College, Cleveland, Ohio, a paper entitled "*Some Microscopic Observations and Experiments connected with the Study of the Structure and Functions of the Parent Gland Cells, and the Development of the various Causes of the several Types of Rheumatism, with their Classification and Treatment. Also some Observations and Experiments bearing upon a serious class of derangements excited by causes that under other conditions produce certain forms of Rheumatic Disease.*"

Prof. S. maintains that "Rheumatism is not a disease arising always from one and the same cause, and amenable, in all its varieties, to one and the same kind of treatment. The word Rheumatism should be the generic name only of a number of pathological conditions, each one of which has a distinct cause possessing distinguishing characters that are specific.

"As long as the Parent Gland Cells organize normal products in the normal quantity, no such thing as rheumatism could possibly occur. As soon, however, as these normal conditions are disturbed, the physiological balance is deranged and pathological conditions arise, at first functional, but which continued long enough tend to organic changes.

"We are all of us more or less constantly exposed to conditions which have a tendency to disturb the physiological functions.

"We have but little control over the cell elements and the filamentous tissues formed by the metamorphoses of these cells after they have been organized and have escaped from under the influence of the parent gland cells. It is upon the parent gland cells that all healthy and diseased impressions are made; and it is to these cells we must look for diseased states, and to these we must address our remedial agents if we expect to remove successfully the causes of pathological derangements.

"When a case comes to the physician, very frequently the primary causes of disease have ceased, and he has only to do with the resulting disturbance, which now, to all intents, is the cause. If, however, the primary causes are still in force, these should be first removed, and secondly, the results, or the diseased states of the gland cells sought out, and means resorted to, which will, in the most direct manner, restore the healthy functions.

"Each individual parent gland cell has all the elements of an independent organism possessing a vitality, independent of that of the systemic life. Each cell feeds, digests its food, assimilates it, grows, organizes, and eliminates. In its normal condition it organizes those cell, and filamentous, and other products that are needed for the physiological tissues. When its food is imperfect, its processes of digestion, assimilation, and organization become deranged, and pathological products are the result.

"These pathological products vary with the varying conditions.

"Under certain diseased states lithic acid and the lithates are formed in

too great quantity to be kept in solution by the eliminated fluids, and hence they accumulate in certain tissues.

"Under other pathological conditions oxalate of lime is formed. This body being for the most part insoluble in the fluids eliminated, it accumulates, first in the tissue in which it is formed, and later, if the diseased states continue, it extends to the other parent gland cells and tissues, and finally the entire organism becomes loaded with this salt. In still other pathological states, cystine, another insoluble body, is formed by the parent gland cells, and this body, like oxalate of lime, not being soluble in the fluids eliminated, gradually accumulates in the various gland cells and tissues.

"Under other abnormal states the phosphates of alkalies and alkaline earths are formed, and gradually accumulate, as in the cases of cystine and oxalate of lime. Under still other conditions, two, more, or all of the pathological states previously mentioned may be present, under which circumstances we have the two, more, or all of the specific states united. Now, these are precisely the conditions that develop the causes of rheumatism. It will be seen that these causes are several, and that each is specific and must produce a peculiar type of the disease requiring special treatment.

"We then may have four or more types of rheumatism.

"These may be designated as follows:—

1st. Lithic Rheumatism. 3d. Cystine Rheumatism.
2d. Oxalic " 4th. Phosphatic "

"The causes which, under certain conditions, produce the various forms of rheumatism, under other circumstances result in a variety of mental, paralytic, and neuralgic disturbances."

We hope, before long, to be able to lay before our readers the details of the researches and experiments of Professor Salisbury.

Case of Hemeralopia successfully treated by Strychnia and Opium combined. By W. H. GARDNER, M. D., Assistant Surgeon and Brevet Major U. S. A.

Michael Carland, a private of Co. F, 10th U. S. Infantry, was admitted to hospital June 20, 1866, with chronic hemeralopia (night-blindness), with which he had been afflicted for over three months. He was a large, stoutly built Irishman; an iron-puddler by trade.

When he entered the hospital there was some congestion of conjunctivæ, and slight headache; bowels had not been moved for two days. There was no fever or excitement of the pulse; iris contracts or expands slowly; can scarcely see at all at night, even in bright moonlight. I ordered him cupped over each temple; to have four compound cathartic pills at bedtime, and to be placed on half diet.

During the four months which followed his admission I successively tried mercury to salivation, potass. iodid., valerianate of zinc, iron, quinia, &c.; besides counter irritation by blisters, kept open for over two months; and also strychnia, but with no beneficial result. Finally, I gave him strychnia and opium combined in the following prescription, and improvement was evident in less than one week after he commenced taking it: ℞.—Strychnia, gr. j; tinct. opii, ʒiij; acid. acetici, gtt. v; aqua destil. ʒijss.—M. S.—A teaspoonful each night and morning. This dose I gradually increased to three teaspoonfuls per day. A few days after the last increase of the dose he was returned to duty cured.

When he commenced to take the strychnia and opium combined, his general health was excellent; but the disease of the eyes had so progressed that he was somewhat worse than when he entered hospital. He was totally blind after sunset, and could only see the brightest artificial light as a "faint glimmer." The pupils at all times—especially, however, at night—were widely dilated, and contracted very slowly under the stimulus of light. He has now been on duty nearly two months, and has yet had no return of the disease.

Save the congestion of the conjunctivæ mentioned when he first came in, I could discover no disease of the eye externally; but having no ophthalmoscope, I could not examine the internal structure. If this union of apparent incompatibles has ever been used before in this disease, I am not aware of it, and therefore send this case for publication.

Post Hospital, Fort Abercrombie, D. T.

Case of Twins—one blighted at two and a half months, the other retaining its vitality and expelled about the sixth and a half month of utero-gestation, and, three days afterwards, the blighted fœtus. By V. Kersey, M. D., of Richmond, Ind.

On the 27th day of August, 1866, I had charge of a case of premature labour. My patient believed herself to have fully completed the fifth month of gestation—possibly to have advanced a week or two in the sixth. She was promptly delivered of a male fœtus, evidently premature, but, from the state of development and vital energy, the opinion was expressed that the middle of the sixth month had probably been reached. It breathed freely, and cried, though quite feebly; yet it lived only a few minutes—probably ten or fifteen—after the cord was severed. The mother was readily and satisfactorily cleared of the placenta and membranes. I estimated the length of the fœtus at twelve or thirteen inches, its weight at a pound and a half. The nails were well developed, and, I think, covered full two-thirds the space from their origins to the finger-ends. The eyes were fully open, the lids being entirely free, as I think, from adherence.

On the third day after this labour, the lady in question gave birth to a miniature embryo, which the intelligent husband at once put into strong alcohol, and, at his earliest convenience, it was placed at my disposal. My observations on this embryo were made after it had been long enough in alcohol to be deprived, to a great extent, of its natural fluids; and no doubt, in some dimensions, it was greatly shrunken. On careful measurement it was found to be one inch and seven-eighths in length. The weight, immediately after taking it from the alcohol, was nineteen grains (apoth. wt.). It probably never exceeded two or three drachms when distended with natural fluids. Ossification had made some progress in the clavicles, ribs, and sternum, the maxillary, frontal, occipital, and some of the long bones. The eyes appeared as dark spots; the mouth as a large open cleft in the face. The nose and ears were not cognizable; the outlines of the toes and fingers were visible, but these members were united throughout by a web. There was no appearance of decay, nor indication that vitality had been long suspended. The age of this embryo was estimated at from two to two and a half months. The mother, in her thirty-ninth year, has borne seven living children at term, and suffered seven abortions. She is of a remarkably fruitful family, her grandmother having

borne sixteen, and her great-grandmother twenty-two living children, at full term, and at as many births, nearly all of whom lived to adult age.

During the pregnancy in question, the lady several times suffered from what were regarded as attacks of passive hemorrhage, which, it is obviously possible, might have been simple menstruation, after the first fecundation; but no suspicion of this kind was entertained, and the date of these attacks was not noted. The labour was attended with very trifling loss of blood; in fact, no kind of complication was observed. The idea of a double uterus was not suggested at the time of delivery, and, of course, no investigation was made in that direction; but it seems scarcely probable that this rare condition should exist in one so frequently delivered, both prematurely and at full term, without affording some indication of the fact. Future events may possibly enable us to determine this question.

It is to be regretted that the products of this pregnancy were not both subjected to critical examination at birth; but in the absence of positive facts, I have given the best estimates I can. That they were both born of the same mother, as above stated, admits of no doubt; the intelligence and probity of the parties being such as to place their statements above suspicion.

Compound Comminuted Fracture of Maxillary Bones. By J. M. SNYDER, M. D., Maple Row, Romney, Hampshire County, Va.

On the evening of the 17th of April, Capt. Richard Sloan was kicked by a horse upon the right side of the face, fracturing the lower jaw-bone. The foot of the horse came in contact with the lower jaw-bone in a horizontal direction, the full force of the blow being received between the symphysis and right mental foramen. The fracture extended in an oblique direction from the external surface of the jaw, at the first molar tooth internally, to the spina interna, without displacing any of the teeth—except, perhaps, slightly, the cuspid tooth. The internal end of the fracture, involving a portion of the spina interna, was comminuted, and a small portion of the bone came away during the progress of the case. There was another fracture between the lower edge of the coronoid process and the first molar tooth; and in the space of the attachment of the mylohyoides muscle, which was distinctly transverse, and could be easily discovered by the very uneven form of the internal surface of the jaw, and the distinct irregularity of the alveolar arch. This fracture was also comminuted, but no pieces of bone came away. The fracture could be very readily reduced; but to retain it in coaptation was found to be the great difficulty. The bandages in common use for such cases, and flat corks between the teeth, together with a covering of pasteboard adapted to the shape, and made to fit the jaw, were used for a few days, but very unsatisfactorily; so that it was evident great deformity must ensue unless some more effectual method were soon adopted to prevent motion and insure permanent coaptation. The great severity of the kick produced considerable concussion and the usual concomitant symptoms, though not alarming in their character.

The Captain recollected nothing of the accident, and only remembered having been in the stable with the horse. No abrasion of the facial integuments was discernible until after some days, when a slight contusion was observed opposite the cuspid tooth, with slight ecchymosis.

The superior maxillary bone was also fractured, but not extensively; three of the teeth, viz., two incisors and cuspid, were forced from the

alveolus, and the alveolus itself was crushed to the extent of one and a half inches immediately above the anterior fracture of the lower jaw. The palatine plate was also implicated in the fracture, but without loss of substance.

I found the patient, five or six hours after the accident, suffering intense pain in the fractured part, which was much swollen. I supposed the pain was of a neuralgic character, rather than the result of any inflammatory action, for the circulation had not as yet reacted. This pain, I had no doubt, was kept up by the irritation caused by displacement of the fractured bones, and would subside after the fracture was adjusted, which I found to be the case. About twenty hours after the accident the system reacted powerfully, requiring depletory measures. VS. xxiv. ounces, saline cathartics administered for a few days, together with spts. nit. dulc. and tart. ant. et potassa, and the antiphlogistic treatment generally, until the inflammatory symptoms subsided, when I proceeded to adjust the fracture in a more permanent manner. For this purpose I had made, by a silversmith, a thin silver plate, half an inch in width, and sufficiently long to reach from the posterior external part of the second molar tooth on one side to the same point on the other side, covering the symphysis in front, and perforated with very small holes, the width of each tooth apart, and three-sixteenths of an inch from the top of the plate. After flexing it so that it fitted precisely the shape of the jaw, I applied it, and with the aid of an assistant succeeded in placing a very small silver wire around the tooth at each extremity of the plate, and drawing each end of the wire through the holes in the plate, and through the small tubes of a double silver canula, twisted them until the bone was drawn to its normal position. Wires were also attached to some of the incisors, for the purpose of keeping the plate more permanently fixed. The plate being elastic, a constant traction was kept up from within outwards, thereby counteracting the displacing action of the mylohyoideus, pterygoid, and masseter muscles. The plate was permitted to remain fifteen or eighteen days, when it was removed. During the progress of the case, to correct fetor and encourage healthy action in the mouth, the solution of chloride of soda was frequently used with a very happy effect.

The Captain suffered from neuralgic pains of the legs, which ultimately subsided, and in thirty days he was discharged cured.

The points of interest in the above case seem to me to be these:—

1. The bone could not be retained in its natural situation by the usual method of bandaging, on account of the strong displacing action of the submaxillary muscles.

2. There being both an oblique and transverse fracture very near each other, and a distinct natural irregularity in the arch of the teeth, rendered it impracticable to retain the fractured ends of the bone in apposition. It therefore became important that some more effectual method of reduction should be adopted, and the above-described plate suggested itself as the best. The fracture never became displaced after its adaptation, and reunion was rapidly and permanently established in about fifteen or eighteen days.

Some time after the occurrence of the above case I consulted authorities on the subject of fractures of the lower jaw; and I found, very much to my gratification, in vol. ii. of Samuel Cooper's Surgery, in a note appended to page 364, the following description of a case very nearly like the one above described.

"In a very bad double fracture of the jaw, which had remained ununited and displaced nearly three months under the care of other surgeons, my brother succeeded in restoring the fragments to their proper position by the use of a silver band placed in front of the teeth, and fastened on both sides, as well as to the intercepted and loose portion of the jaw, by loops of wire twisted tightly around the teeth. Bandages and external dressings had all acted injuriously in this case, by forcing the fragment which was intercepted between the two fractures into the cavity of the mouth. Soon after these were laid aside, and while the silver band was alone depended on, the fractured surfaces began to reunite, and in less than a month the parts were perfectly consolidated."

Parotitis with Sloughing of the Integuments of the Neck. By S. J. RADCLIFFE, M. D., of Washington, D. C.

A. Fisher, private Co. B, 62d Penn. Vols., æt. 23, stout built, of rather phlegmatic temperament, was admitted into U. S. A. General Hospital, Div. No. 1, Annapolis, Md., July 3, 1866, suffering from a slight gunshot flesh wound of the thumb of the right hand, which soon healed. On the 15th he was attacked with a slight chill, followed by febrile action, with pain, heat, and swelling under both ears, stiffness of the jaws, and slight difficulty in swallowing. The swelling soon increased rapidly downwards and forwards, as well as upwards, making the face and neck hideously large and deformed. On the 5th day, abscesses having formed on both sides, the left opened spontaneously by several small sieve-like orifices externally, extending a little below the gland and nearer the trachea, and also internally, and discharged much highly offensive, dark, ichorous matter and altered pus, of an irritative character, much of which burrowed under the integuments along the course of the sterno-mastoid muscle, downwards, sloughing away the entire integumentary tissues for a space two inches in diameter, and exposing the muscles of the left side of the neck plainly to view. The right now made a communication with the left at the lower part of the opening under the integuments of the right side of the neck, and the discharges issued through the same opening, attended by very little sloughing or discoloration of the skin, the discharge seeming to be of a healthier nature than that from the left. Deglutition was very difficult and painful, and the discharge from the mouth was as offensive as that from the external opening. The whole contour of the face was distorted, and the muscles of the neck were unyielding and tender to the touch. He had a constant feeling of suffocation, and the dyspnœa was so great at times as to cause alarm for his safety—a recumbent position could not be taken without great suffering. He had a furred tongue and quick pulse most of the time, and the discharges caused rapid emaciation. By the 19th of August his symptoms were altogether better; the swelling had subsided, the sloughs separated, and the edges of the tissues were clean and healthy, the discharge less and normal, deglutition better, appetite good, and his general health greatly improved. He soon recovered after this date, becoming very fleshy, the loss of the integumentary tissues being repaired by cicatrix, and the only bad sequelæ being stiffness of the neck, with feebleness of the lower extremities, a partial loss of motor influence, giving him a waddling motion in walking, and causing him to feel a little top heavy. He was sent to Convalescent Hospital, Annapolis Junction, Oct. 29th, 1862. He had a general tonic and supporting stimulating treatment; his diet consisting of beef-tea, milk, mush and milk, milk punch, broths, etc., and the free use locally of dil. chlor. sod. and dil. nitric acid. There was no distinct hospital gangrene in the hospital at the time, but a number of sloughing wounds.

Case of Puerperal Convulsions. By WILLIAM T. TAYLOR, M. D., of Philadelphia.

July 12*th*, 1866, I was requested to see Mrs. W. J. W., aged 22 years, pregnant with her first child. She was suffering greatly with headache, lower limbs much swollen, full and hard pulse. Ordered a dose of citrate of magnesia, which operated several times and relieved her head.

On the evening of the 14th she again complained of severe pain in the head, attended with vertigo, for which six cups were applied to the back of the neck. At midnight I was summoned again; she was insensible and convulsed. Dr. Norris, a neighbouring physician, who had been called upon in the emergency, told me that she had had a previous fit. Finding her pulse full and hard, with oppressed breathing, we bled her freely from each arm to the amount of three pints, which reduced the pulse, relieved the lungs, and arrested the convulsions. One fit occurred during the bleeding. On vaginal examination there were found no signs of labour. Her insensibility was so great that touching the cornea produced no impression. Her case appeared hopeless. Not deeming it prudent to deplete her further, an injection of half an ounce of spirits of turpentine in molasses and warm water was administered every two hours, until she had a copious evacuation, and ice-water was kept constantly to the head.

July 15*th*, 9 A. M. Pulse much lower, face pallid, extremities not so much swollen, still insensible. On vaginal examination the os uteri was found beginning to dilate, and labour commencing. 2 P. M., the pains quite active and regular, bladder empty, os fully dilated, the vertex presenting in the first position, at the superior strait. The uterine contractions soon became very powerful, but with very little effect on the head, which was large. After waiting half an hour applied the forceps and delivered, but the extraction of the shoulders required the united efforts of Dr. N. and myself. The child was dead; there was some exfoliation of the skin of the head, neck, and scrotum. To insure contraction of the uterus an ounce of the wine of ergot was given, and the placenta removed; the hemorrhage was very slight, but as patient was exhausted gave her some brandy and water, and applied a bandage. No signs of consciousness yet; accordingly ice in a bladder was applied to the head, and she was watched constantly until my return. 6 P. M. Has passed some flatus from the bowels, her abdomen is soft, her tongue furred, and pulse feeble, but she is still unconscious, and has considerable jactitation. Gave a teaspoonful every hour of the following: ℞.—Liq. morph. sulph., ext. valer. fl., āā ℥ss; aq. camph. ℥j.—M. After taking three or four doses she became quiet and slept.

16*th*. Has passed a quiet night; pulse somewhat stronger; skin moist; tongue slightly furred; the abdomen soft, with some tenderness on pressure; the uterine hemorrhage small. She had urinated and defecated, showing for the first time signs of consciousness. This morning she swallowed thin oatmeal gruel with brandy. The cold was still kept to the head, and the mixture given occasionally when she was restless.

17*th*. More conscious; the skin moist; tongue cleaning, but sore from having been bitten during her convulsions; the tenderness over the abdomen gone; the pulse 96 and stronger.

18*th*. Perfectly conscious; skin moist; tongue clean; pulse 80; abdomen soft; the lochial discharge quite free. Applied an ointment of the extr. belladonna to the mammary glands to prevent the secretion of milk.

19*th*. The bowels were moved naturally this morning. No secretion

of milk, but the pupils are somewhat dilated by the belladonna. Has no recollection of her sickness; her reduced size assuring her that her babe was born, and not being aware of its death, she has often inquired for it. She remembers the afternoon of Saturday, the 14th ult., when a thunder-storm occurred whilst she was standing near the window; a heavy clap of thunder, followed by a vivid flash of lightning, caused her to move towards the centre of the room; of what occurred from that time until Tuesday 17th she knows nothing.

21*st.* Is weak and nervous; has no appetite; gave her some animal broth, and ordered a teaspoonful three times a day of the following: ℞.—Elix. ammon. valer. ℥ss, elix. cinchonæ ℥iss.—M.

23*d.* Appetite very good, and strength increasing. Partook freely of mutton-chops and coffee. The pulse now reduced to 72; skin cool; tongue clean; bowels moved naturally; the lochial discharge has nearly ceased; no pain in the head, and she is "in her right mind."

25*th.* The lochiæ have ceased; she is perfectly convalescent; is anxious to resume her household duties.

August 1*st.* She has now so far recovered as to require no further attendance.

The peculiarity of this case was, that after such free depletion she remained unconscious for 36 hours, and yet recovered so rapidly without any unfavourable symptoms.

Case of Poisoning by Morphia. By D. WEBSTER PRENTISS, M. D., of Washington, D. C.

I was called on Monday night, Oct. 8th, about 10 o'clock, to see, in consultation, a light mulatto, aged 16, of no settled occupation, but had last been engaged in "long boating," in which business he had contracted intermittent fever; apparently not of strong vital power. When first seen he was perfectly comatose, motionless; breathing scarcely perceptible, except at intervals of twice or thrice in a minute, when long stertorous inspirations were taken; eyes closed, and pupils contracted to the size of a pin's head, and entirely insensible to light; extremities cold, and general surface of the body cool, except in the neighbourhood of the heart; pulse about 80 per minute and very feeble; face livid and congested, but not *puffy*, and very strongly reminded me of the expression of countenance I saw in several fatal cases of sunstroke last summer.

The history of the case was, that he left home in the morning *well;* about half past eleven, "feeling a chill coming on" (his own expression), he took two pills from a friend, which it was said would cure them. Shortly after, had a spasm of some sort lasting five or ten minutes; about one o'clock felt sleepy, but expressed himself as being afraid to go to sleep, for fear of not waking again; nevertheless, laid down and fell asleep. Supposing him to be sleeping naturally, he was not disturbed by his friends until later in the afternoon, when, on attempting to waken him, it was found he could not be entirely roused. From this time the breathing was stertorous, and the coma continued increasing until half past nine, when the first physician was summoned. Then it was impossible even to partially arouse the patient, and the general condition was the same as described above, except the pulse, which was 60 beats per minute and rather full. It however rapidly grew feebler, and then increased in frequency; later the pulse was slow and hardly perceptible between the long inspirations, when it was sometimes difficult to say that the patient still lived,

but quickened, with tumultuous action of the heart, when the convulsive effort for breath came on, indicating that the vital power was rapidly being exhausted. Death took place about 12 o'clock midnight.

The treatment was simply warmth, sinapisms, and frictions; and hypodermic injections of one-eighth of a grain of sul. atropia, first over the deltoid muscle, and repeated in loose skin of the neck. These last were evidently not absorbed, for the little tumour caused by the fluid remained up to the time the case was given up, half an hour after the trial of the drug, and about the same time before death.

Autopsy thirty-nine hours after death.—Body packed in ice; cadaver thin but not emaciated. Cavity of abdomen opened; *peritoneum* perfectly healthy; stomach and bowels apparently the same, externally rather paler than usual; *stomach* tied at both extremities and reserved for chemical examination; *bowels* contained a very little solid matter, and *that* healthy looking feces. Liver, kidneys, and bladder inspected, but not removed, nothing abnormal in their appearance. Cavity of thorax not examined. The calvarium was next removed, and contents of skull observed. There was strongly marked venous congestion of the surface of the cerebrum; the blood was abnormally fluid; a fibrinous clot was found in the longitudinal sinus, commencing at its confluence with the lateral sinuses, and extending down the right lateral sinus. In the left lateral sinus was a feeble clot of black blood. This clot of fibrin was very feeble, being with difficulty extracted, and when placed on paper, collapsed more than half its size, by losing the serum which it had entangled.

The substance of the brain was healthy, but also congested; when cut, little points of blood exuded from the cut surface. There was no fluid in the ventricles, nor cavity of the arachnoid. Base of brain was likewise congested.

It will not perhaps be improper to add in connection with the account of this case, that it was investigated by a coroner's jury, who failed to agree, because no provision is made by the law in this district for paying for chemical examinations in such cases, and no expert chemist could be found to take the responsibility without a proper fee. The circumstantial evidence was strong, that opium or some of its preparations had caused the death, but the physicians were unwilling to give a positive opinion without an analysis of the contents of the stomach, and also of a sample of the pills taken by the patient. This could not be obtained, and the coroner's jury were discharged without a verdict.

At whose door the responsibility of the boy's death may lie, does not concern us in this report, the medico-legal bearing of the case, as adding another to the list of opium poisoning, being only of interest. In order to confirm the case, I took pains to secure a sample of the pills taken, to analyze for my own satisfaction. The pill had lost all of its moisture by evaporation, and was crumbling again to powder, weight two grains. It was tested with nitric acid, the result being compared to that obtained by adding the same acid to undoubted sulphate of morphia; in both instances it was precisely the same—at first a deep orange red solution, with effervescence, then, on addition of an excess of acid, a yellow.

From the testimony before the coroner, it appeared that the man giving the boy the pills had taken one of them himself, at night, producing vomiting, followed by intense drowsiness; and on the following morning had taken another with the same effect, the vomiting probably saving his life.

257 Ninth Street, Washington, D. C., Feb. 7th, 1867.

Obstinate Singultus cured by Extract of Cannabis Indica.—Dr. GEO. P. SALMON, of New Lebanon, New York, has communicated to us a case of singultus which persisted for five days, resisting various antispasmodics, stimulants, &c., and which was entirely relieved in five hours by the administration of eight drops of Tilden's extract of Cannabis Indica every hour. Dr. S. states that he has used the same remedy beneficially to check the paroxysm of asthma, and has found it valuable in hysteria and in the nervous irritability resulting from various uterine disorders.

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Four Children at a Birth. By C. J. FAUST, M. D. of Oaklands, S. C. On the 3d inst. I visited Mrs. H., who had been confined on the 26th of last month at 11 o'clock A. M. of a healthy male child, and on the morning of the 27th, between the hours of 6 and 8 o'clock A. M., she was delivered of three more healthy male children, making four in all.

They will average five pounds in weight, look well, and seem to be perfectly healthy, and all nurse the mother. There was but one placenta, very large, square, and the umbilical cords were attached to each corner. The mother is just 25 years of age, and had had nine living children prior to the birth of these, and is doing as well as she usually did in her previous confinements.

These are facts that can be asserted to by two respectable physicians (Drs. Folk and Black) who were in attendance.

March 6th, 1867.

DOMESTIC SUMMARY.

Abscess of the Appendix Vermiformis; Operation; Cure.—Under this title Prof. WILLARD PARKER relates (*Medical Record*, March 15, 1867) the following highly interesting case: "J. D., æt. 40, strong, of full habit, was attacked with pain in the bowels at half-past four o'clock in the morning of Friday, January 12, 1866. He has been more or less subject to severe attacks in the bowels for some years. The night preceding the present attack, he had been out with friends and had eaten a late supper. At five A. M. he vomited, and felt some pain in the right iliac fossa. At eight, he took coffee and toast, after which he went down town. During the day he had no appetite, and took no food until evening, when he ate a little cold chicken. There was no movement from the bowels during the day. In the night he had nausea. On the 13th he arose early, having passed a restless night. After breakfast he took two blue-pills. During the day he suffered from pain in the right side, which was relieved by bending over to that side. On the 14th, there being as yet no movement from the bowels, he took a glass of Saratoga Empire water. Pain, restlessness, and nausea still continued. Mustard was applied over the affected side. This evening he had an inefficient movement from the bowels. On the 15th, the above symptoms increased in severity, continued, and in addition he was troubled with eructations. In the evening his family physician, Dr. Sabine, saw him, and ordered opium, and a blister to the affected side, also leeches. On the 16th, I saw the patient in consultation with Dr. S. We found him with a thickly coated tongue; no appetite; nausea, and a constipated state of the bowels; pulse inflammatory, ranging over 100; skin dry and feverish; abdomen tumid and resonant on percussion; pain in the whole abdomen, but more decided in the right iliac fossa. Over this was a circumscribed tenderness, the boundaries of which could easily be marked out by the fingers. Micturition painful; pain also extended down the right thigh, and to the right testicle, which was drawn up. He was lying with his right thigh flexed on the pelvis, which position gave him some relief.

The case was diagnosed as probably abscess of the appendix vermiformis.

To render it certain, however, that there was no internal hernia, intussusception, or impaction of feces, and to clear up the diagnosis, we ordered calomel, gr. xv, and opium, gr. iij, to be given in three doses. On the morning of the 17th, ol. ricini ℥j, with tr. opii gtt. xx, were administered, and operated freely, a large quantity of scybalous feces coming away. The immediate effect was an amelioration of all the symptoms. The pulse became soft, and fell to 80; skin moist; tongue less coated; some return of appetite; abdomen less tumid, and the pain became definitely circumscribed in the right iliac fossa. On the 19th, his symptoms indicated a return of his former condition. During this day he was kept under the influence of opium, and on the 20th, finding his symptoms more unfavourable, his exact condition was explained to him and the operation proposed. It was, with his consent, decided that if on the next day there should be no improvement, it should be performed. On the 21st, there being no change for the better, but, if anything, for the worse, and it now being the ninth day of the attack, it was decided to operate as soon as practicable. An injection of catnip-tea was given, to relieve the bowels of wind, and at half-past two P. M., assisted by Drs. Sabine, Sands, Thomas Sabine, and my pupil, Mr. Wynkoop, I commenced the operation.

An incision six inches in length was made through the integument, commencing above, and about one inch from, the anterior superior spinous process of the ilium, running towards the symphysis pubis. About one inch of the incision was above an imaginary line drawn from one ant. sup. spin. proc. to the other, and five inches below. The incision was continued carefully down, and all the structures found to be healthy, until the fascia transversalis was reached, which was found to be thickened. This was divided over a director, and right beneath a tumour was felt, which was about two inches long and an inch and a half in width. An exploring needle was introduced, when immediately there gushed up some thick, bad-smelling pus. The sac was now freely opened, and about four ounces of pus, in which there may have been a little feces discharged. A tent was introduced into the cavity, and the wound left to close up by the granulations. The patient rallied well after the operation, and passed a good night. The next morning he was in a quiet condition; pulse 84, soft; tongue more moist; abdomen soft; but little fever; wind escaping freely from the bowels; wound discharging healthily. The after-treatment consisted entirely of rest, opium, and nourishment. Perfect recovery took place in three weeks, and at the date of writing (Dec. 1866) he is enjoying perfect health.

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Poisoning by Morphia relieved by Belladonna.—Dr. J. L. Prentiss records (*Chicago Med. Journ.*, Dec. 1866) a case of a female said to have swallowed five grains of morphia at 5 o'clock P. M. Aug. 28. When seen by Dr. P. at 11 o'clock P. M. she was in a state of complete insensibility; pulse 80, moderately full; pupils contracted; breathing stertorous; and at times arrested for a minute; skin cold; masseter muscles rigid; and teeth firmly closed. By the application of cold to the head and cold douche to the face and chest and considerable shaking she was sufficiently roused to be able to swallow; when one drachm of tincture of belladonna was given and the dose repeated every half hour for two hours when the pupils became dilated, the breathing more natural, and the patient seemed comparatively free from the influence of the morphia.

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Grindelia Robusta in Asthma.—Dr. Henry Gibbons, editor of the *Pacific Med. and Surg. Journ.*, relates in the number of that Journal for December last, the case of a clergyman, of San Francisco, "who had been a victim of asthma, in its most virulent form, for about six years. His health gradually yielded to the disease, until at length he felt almost prepared to succumb, and to abandon all prospects of further service in his vocation. For a long time he had generally passed the night in his chair, with the torture usually incident to his disorder. He had exhausted the ordinary round of remedies, finding some relief from the paroxysm in the inhalation of chloroform. At this juncture a friend sent to him a quantity of syrup prepared from the herb above named, with the assurance that the person sending it, and a number of other individuals, had been cured or greatly benefited by the use of it in asthma.

Without attaching any importance to the article, or anticipating any benefit from it, he took a wineglassful of the syrup on going to bed—not, however, until he had consulted his physician, Professor Ayres, who permitted its use merely as a safe experiment. That night, for the first time for many months, he slept soundly, and was amazed, on waking, to find that the night was past. This was in April last, and he continued the medicine regularly in the same manner, with the same results, for four months, when a slight return of the disease took place, after unusual exposure and fatigue. But he has not spent one night out of bed since beginning the use of the medicine, now seven months ago. His general health and strength are greatly improved, and he is now capable of performing the most arduous duties incident to his profession, though frequently threatened with returns of his malady. On the threatened approach of a paroxysm, indicated by a sense of constriction and wheezing, he immediately resorts to the medicine, always with relief. Besides this, he takes regularly about a wineglassful of the syrup every night. Hitherto, he has suffered most severely late in autumn, prior to the rainy season. But this year he has passed through that period with comparative comfort.

"The syrup is prepared from a strong decoction of the herb, in the usual manner, a small quantity of gin or brandy being added to prevent fermentation. It is not unpleasant to the taste. It has no apparent effect on the stomach, bowels, kidneys, or skin. The only sensible effect is on the pulmonary organs, promoting expectoration.

"The Grindelia Robusta grows extensively through the State, mostly in hilly situations. It throws up a straight unbranched stem, one or two feet in height, with short, rather rigid leaves, and a spherical head of flowers on the top. It belongs to the composite order of plants, the flowers having white rays about half an inch long. It may easily be known by a drop or two of a resinous fluid, which looks precisely like milk, and which is always to be seen attached to the calyx. In the mouth it yields a balsamic taste, and the odor is aromatic or balsamic."

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A New Canulated Needle for Introducing the Wire in Operations for Vaginal Fistula.—Dr. GEO. SYNG BRYANT describes (*St. Louis Medical and Surgical Journ.*, vol. iii. No. 6) a modification which he has made of Mr. Startin's canulated needle for introducing the wire in vaginal fistules. He has altered somewhat the shape of Mr. Startin's needle, and added to it a slide with a key and spring attached, so as to hold fast the wire, and furnish just the amount wanted at each stitch.

The accompanying cut is of two-thirds size, and requires no explanation, for with even a superficial examination, every part of the instrument will be readily comprehended by the surgeon. Dr. B. states that he is now having made a needle, curved laterally, for the transverse suture, in longitudinal or oblique fistules, and also has just completed a diagram for a needle upon this plan, to be used in operations for cleft palate.

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Menstruation in the Male.—Dr. V. O. KING records (*Southern Journ. Med. Science*, Feb. 1867) a case of this in a young man, about 22 years of age. The discharge flowed from the sebaceous glands of the deep fossa behind the corona glandis, was of a sanguineous appearance, homogeneous and thick; the quantity varied from one to two ounces at each period, and the period lasted from three to six days. When Dr. K. made the acquaintance of the subject of this anomaly, the vicarious secretion had been observed for three years.

Fracture of Cricoid and Thyroid Cartilages.—Dr. F. H. HAMILTON presented to the New York Pathological Society (June 13th, 1866) a specimen sent him by Dr. Ellis, of Kent Co., Michigan. He then gave the following history:—

It is a fracture of the cricoid and thyroid cartilages. The accident occurred on the 13th of September, 1864, the patient being kicked in the throat by another man who happened to be on a platform above him. The blow was inflicted on the front of the larynx a little to the right side. After the receipt of the injury the man staggered and was able to walk to his house, which was some distance from the place. The physician was immediately called, and found his patient with symptoms of threatened suffocation. No surgical means were employed for his relief, and he died in two and a half hours. The autopsy was made by Dr. Ellis, but he did not examine the interior of the laryngeal box. He observes that there was a fracture of the thyroid cartilage nearly in the median line, in front, and a little to the right; that the cricoid cartilage was broken vertically, or nearly so, deflecting obliquely nearly an inch from the median line.

I think that there is a line of fissure on the left side corresponding to this point. The thyroid cartilage is depressed about two lines on the right side. The point of interest on laying it open is, that I find that there has been an extensive infiltration of blood underneath the mucous membrane lining the larynx, and extending a little down in the trachea. This effusion is particularly abundant on the right side, just below the ventricle. The Dr. informs me that at the autopsy (two years ago) this bloody effusion filled up the larynx.

I believe that this man died of apoplexy of the larynx. I think that whatever effusion might have occurred in the course of two hours and a half, would have been comparatively insignificant. It is very apparent now, that an operation might have saved the patient's life, yet it is a little remarkable, although this operation is the natural suggestion in the great majority of instances, it has not been performed. In the majority of instances the patients have been permitted to die without interference, in all probability the diagnosis not being fully made out, or it not being supposed that the fracture of itself should cause death.

In connection with this case, I may say that I reported one of fracture of the cricoid and thyroid cartilages on which I operated. The patient survived seventy-two hours after the injury, and thirty-six hours after the operation. I do not know what he died of, as he was very far from my residence. His symptoms of suffocation, however, were entirely relieved. In these cases there is very strong reason why the operation should be performed early. The injury is a very severe one, and the swelling which will soon interpose will be a very serious obstacle.

In answer to a question from Dr. Post, he remarked that the physician thought his case was terminated by inflammation of the lungs.

Dr. KRACKOWIZER did not think that pneumonia could kill a man in thirty-six hours, but was disposed to refer the cause of death to the œdematous effusions and congestion of the organs, brought about by the disturbance in the lungs occasioned by a struggle of thirty-six hours for breath.—*Medical Record*, Jan. 1, 1867.

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Removal of the Uterus and its Appendages in a Case of Procidentia Uteri.—Dr. S. CHOPPIN relates (*Southern Journ. Med. Sciences*, Feb. 1867) a case of this. The subject of it was a woman 38 years of age. The tumour was six inches in length and three and a half in breadth. The operation for narrowing the vagina having failed to afford relief, Dr. C. determined to remove the uterus and its appendages. Accordingly, on the 12th January, 1861, the patient being brought under the influence of chloroform, Dr. C. operated in the following manner:—

"The tumour was seized by a pair of vulsellum forceps, implanted in the neck of the uterus, dragged down as far as possible, and held steadily by an assistant. A circular incision was then made through that portion of the vagina attached to the neck of the uterus, so as to completely separate it, with a view of drawing the organ down and separating it from its peritoneal attach-

ment; but I was thwarted in my attempt, by adhesions which were found to exist anteriorly between the anterior wall of the vagina and uterus to the posterior wall of the bladder, and posteriorly to the lower wall of the vagina and anterior walls of the rectum. By a careful dissection I severed the anterior and posterior adhesions, thus permitting of further traction downward of the uterus, and exposing a pedicle made up of the peritoneal attachments of the organ. The hemorrhage, which thus far had been quite profuse, was arrested before proceeding any further. The loop of 'Chassaignac's Ecraseur' was now thrown around the peritoneal attachments and gradually tightened, during a period of twenty-five minutes, when its division was completed, and the uterus, left Fallopian tube and left ovary removed. It was found that the right ovary had not descended, and, consequently, the right Fallopian tube was comprised in the pedicle of the tumour, and severed near the body of the uterus, as is seen in the wood-cut. Not considering their removal necessary to the success of the operation, they were allowed to remain in the abdomen. No blood followed the use of the ecraseur. At this stage of the operation, hernia of a loop of intestine took place. This was reduced, and further descent prevented by pressure of the hand of the assistant over the vulva, until permanent closure of the opening in the vagina could be effected. This was done by means of Sims' clamp suture. The inverted vagina was then reduced, the patient removed to her bed, placed upon her back with the pelvis elevated, and a full dose of opium administered. The patient rested well all that night. The next day no febrile reaction whatever occurred, although she complained of some tenderness or soreness over the abdomen. On the third day suppuration began, but, an examination by the speculum showed that most of the vaginal wound had healed by first intention. The suppuration, however, continued, quite profuse at times, for about three weeks, when the wire sutures and clamps came away. She was again examined with the speculum, and complete cicatrization of the wound was found to have taken place. The general health of the patient began rapidly to improve from that moment. On the 19th day of February she was presented, in my clinical lecture, to the class of the 'New Orleans School of Medicine,' with her womb in her hand, thus demonstrating that the uterus could be removed without causing death. The patient remained under observation until the following April, during which time her condition improved, so that she presented, at the time of leaving our infirmary, a robust and healthy appearance. Returning to labour and usefulness, she continued to enjoy good health, as I have been informed, until the spring of 1864, when she succumbed to an attack of dysentery."

Iron Ring for Treatment of Fractured Patella.—Prof. PAUL F. EVE, of Nashville, extols (*Nashville Journ. Med. and Surg.*, Feb. 1867) the use of the iron ring in the treatment of fractured patella, as proposed by Dr. W. A. Gibson, of St. Louis (see No. of this Journal for Jan. 1867, p. 281), and records two cases in which he successfully resorted to that plan of treatment.

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